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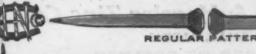


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PAGE 25.

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# THE IRON AGE

THURSDAY, FEBRUARY 11, 1904.

#### The Putnam 90-inch Driving Wheel Lathe.

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One of the most powerful locomotive driving wheel lathes ever built, and one in which several new mechanical features are involved, has recently been constructed by one of the large locomotive manufacturers. The machine is designated as a 90-inch lathe, being designed to swing work of this diameter upon its centers. Independent electrical driving is provided for by constant speed motor mounted upon a suitable bracket attached to the bed of the machine in front of the head stock, and geared to the face plate through trains of gearing, such that all speed requirements are taken care of. The motor shown attached to the lathe is a 15 horse-power induction machine, made by the General Electric Company,

of it. The gear B B' is fitted upon a stub shaft held by an upward arm from the tumbling lever M, as shown at the right hand of the engraving. Extending horizontally is a similar arm, carrying upon its stub shaft the gear C and the pinion D. Gear C is of the same size as B and is also constantly in mesh with the motor pinion A. Whenever the motor is in motion, therefore, gears B and C are both in rotation. The lever M may be placed in either of three positions. When in the middle position shown, gears B' and D are both out of mesh with the gear E upon the intermediate shaft H, Fig. 3. Throwing the lever to upper or lower position, F or G, engages either gear B' or pinion D, respectively, with gear E. Since B' and D are of different diameters, this arrangement provides two different speeds for the intermediate

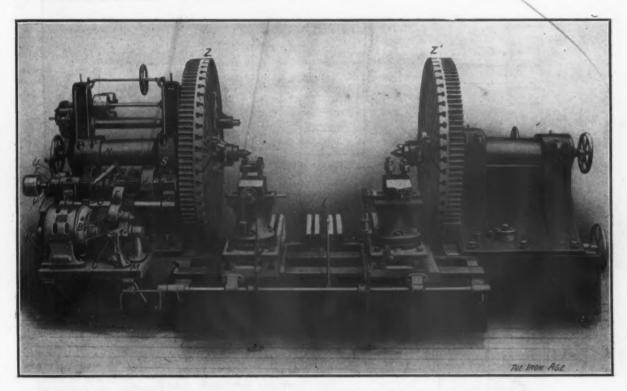


Fig. 1.—Front View, Showing Motor Mounting and Driving Gearing.

THE PUTNAM 90-INCH DRIVING WHEEL LATHE.

Schenectady, N. Y. The motor speed is 1200 rotations per minute, and the gearing between the motor armature and the face plate is arranged to give eight different speeds, covering the whole range needed in the service for which the machine was designed. The motor controller is underneath the bracket upon which the motor is set, and is operated by the lever I, extending vertically upward between the tool posts, within easy reach of the attendant. Even though the operator may be up on the machine watching the boring operation at the crank pin holes, he can readily reach this controller lever.

The general appearance of the motor drive gearing is shown in Fig. 1, and its operation may be understood by examination of the drawings reproduced in Figs. 2, 3 and 4. The reference letters in Fig. 1 correspond to those shown upon the drawings. Referring first to Fig. 2, the vulcanized fiber pinion upon the motor armature shaft A is to be seen at the extreme left. The motor shaft is extended to the right of the pinion, so that its outer end may be properly supported within the pedestal bearing, as shown. The motor pinion is constantly in mesh with the gear B, which is integral with B' and is the duplicate

or auxiliary shaft H, Fig. 3; the direction of motion, however, is the same with either setting.

Turning now to Fig. 3, we find the shaft H cut with teeth to form the pinion O, and carrying the larger pinion J upon the extended sleeve hub of gear E. Upon the primary driving shaft R are the loose gears K and P, and between them the clutch sliding member Q, which may be thrown into engagement with either of the adjacent gears by means of the lever N, Fig. 1. The shaft R is, therefore, provided with two speeds for each speed of shaft H, according as the clutch Q is thrown to right or left. Thus are provided four speeds for the shaft R. Immediately to the right of gear K is keyed to the shaft a cup flange, which may drive the pinion L when the latch pin S is engaged. The sleeve carrying pinion L and the latch plate is loose upon the shaft R. Pinion L is constantly in mesh with the inner face plate gear; by engagement of the latch pin S, therefore, the head stock face plate may be driven at either of four speeds through the shaft R and the pinion L. These four speeds are the faster ones suited to the turning of the axle journals.

For turning off the tires of driving wheels four slower

speeds of rotation are provided and both head and tail stock face plates are positively driven, so as to avoid the vibration and chattering due to torsion of the axle when power is transmitted through it from the head

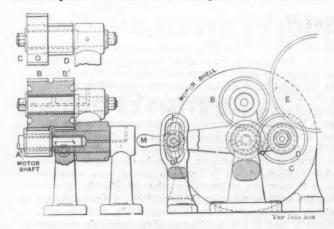


Fig. 2.-Motor Pinion and Tumbling Idlers.

out of mesh with the gear U, or may be brought into driving connection with it, as shown in the engraving. Gear U is keyed to the sleeve hub of pinion V and both are mounted upon a stub shaft attached to the head stock frame. Pinion V in turn drives the large gear W attached to the main or secondary driving shaft X. This shaft is placed directly below the center line of the machine and extends full length, so that just as the pinion Y engages the external gear teeth of the face plate Z, so a similar pinion at the other end of the shaft X will engage the periphery of the tail stock face plate Z'. The pinion Y, as also its mate at the tail stock end, slides longitudinally on the shaft upon a feather, so that it may be engaged and disengaged from connection with the face plate. The extended sleeves of these pinions are cut at their outer ends with circumferential rack teeth, so that by means of pinions the sleeves may be moved to engage or release the pinions Y and Y'. The care which has been taken in the design of this machine to insure positive and steady driving of both face plates may be understood when it is stated that the shaft X, extending through the bed beneath the face plates, has in this 90irch machine a diameter of 61/4 inches, as compared to

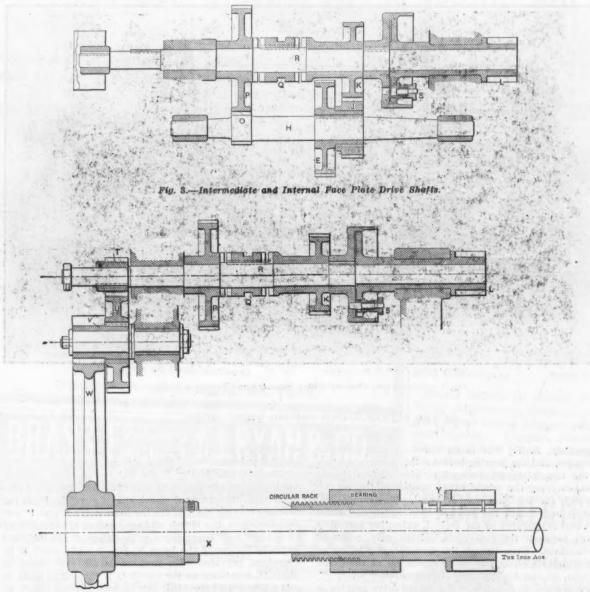


Fig. 4.—Gearing for Esternal Driving of Both Face Plates.

#### THE PUTNAM 90-INCH DRIVING WHEEL LATHE.

stock in turning off the periphery of the wheel at the tail stock end. The arrangements for this drive are shown in Fig. 4. Here the same shaft R of Fig. 3 is repeated, but adjacent to the bearing near the left hand end is shown a pin, T, which may be slid to the left

the more usual one of 4½ or 5 inches in former machines of like size.

The four speeds of the shaft R are, therefore, available either for fast or slow driving, according as the latch pin S is engaged and the pinion T is withdrawn, or

vice versa. The faster speeds, by the primary drive to the interior or smaller face plate gear, are in geometrical progression and are approximately 26.5, 16, 10.2 and 6 revolutions per minute; the slower speeds, by the main drive to the exterior face plate gears, are 1.2, 0.72, 0.46 and 0.275 rotations per minute. As already stated, these speeds for the face plates correspond to a constant motor speed of 1200 rotations per minute.

One novel feature of the lathe is the arrangement for turning the journals of the axles without the necessity for removal from the machine, and without the use of the soul extra fixture. This advantageous feature is due to the construction of the tool block carriages, each of which, as shown in Fig. 5, is in two sections. The front and rear sections of the carriages are fitted upon separate sets of ways, and when the tool blocks are in forward position, as required for turning at the periphery of large wheels, the rear sections are entirely cleared and may be allowed to stand idle near together between the driving wheels, so as not to interfere with them. After the tires are turned the front carriages

rectly to the face plates, as shown in the reproduced photographs. The external and internal head stock spindles are made as large as is practicable in connection with the requirements of the quartering attachments. The feed mechanism is arranged to give tool traverses of from 0.01 to 0.1875 inch per rotation of the work. The actual maximum swing of the lathe is 92 inches; the greatest distance between centers is 8 feet 1 inch; the bed is about 20 feet 4 inches long and 6 feet 9 inches wide. All features of the design are made large and heavy in proportion. The weight, exclusive of the motor, is stated to be about 75,000 pounds. The motor may, of course, be replaced by pulleys, so that the machine may be belt driven.

The builders are the Putnam Machine Company, Fitchburg, Mass., who have now under construction a machine of the same pattern, designed for a swing of 100 inches. This tool will form a portion of their machinery exhibit at the St. Louis Exposition. It may be of interest to note that in this 100-inch machine the main driving shaft in the bed will be 7¼ inches in diameter, and

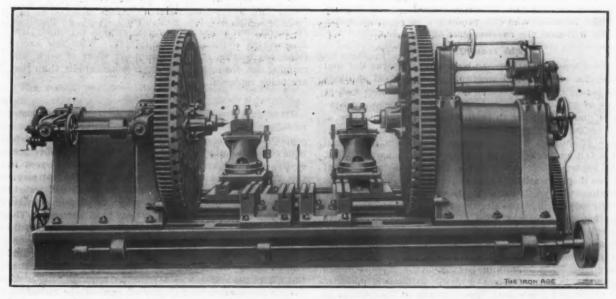


Fig. 5 .- Rear View, Showing Boring Attachment Drive Shaft.

THE PUTNAM 90 INCH DRIVING WHEEL LATHE.

are set over so that their T-slots come into line with those of the rear carriages, when the tool blocks may be moved up, automatically connecting the front and rear carriage sections and enabling the operator to proceed with his work of finishing the journals.

This lathe is fitted with the makers' standard quartering attachment at head and tail stocks for boring crank pin holes. In the head stock this boring attachment is placed vertically above the main spindle, while at the tail stock it is horizontally at the rear, as plainly shown in Fig. 5. Mounted upon the outer end of the clutch shaft R in machines fitted with the quartering attachment is a pulley, driving by belt connection the auxiliary shaft at the rear of the machine, near the floor, Fig. 5. From the pulleys on this shaft belts are led directly to the quartering attachment. Adjustment of the boring attachment radially toward and from the main spindle centers is provided for by the hand wheels shown, rotating the right and left adjusting screws simultaneously through bevel gears.

The construction of the lathe is such as to make it a very heavy and powerful machine to meet the requirements of modern tool steels. The main driving shaft is of steel, 6¼ inches in diameter, as already stated, and has a support midway of its length to prevent vibrations which might otherwise occur under conditions of heavy duty service. The internal spindles are 50 inches long and 8 inches in diameter; they are fitted with tool steel center points, 4 inches in largest diameter. Heavy outside reinforcing hold fasts are provided, boited di-

that other details of the design will be increased in the same proportion wherever necessary.

The Baltimore fire of February 7 and 8 was one of the most destructive conflagrations in history. The money loss is estimated at over \$150,000,000, but, fortunately, very few lives were lost. Among other great fires which have scourged American cities were the following: Chicago, October 8, 1871, 500 persons killed, 12,000 buildings burned, one-fourth of the city laid in ruins, loss \$168,000,000. Boston, Mass., November 9, 1872, destroyed best business section of the city, 65 acres in extent, loss \$75,000,000. St. Johns, N. F., July 9, 1892, 15,000 persons made homeless, loss \$20,000,000. Paterson, N. J., February 9, 1902, 25 blocks in the heart of the city laid in ashes, loss \$10,000,000. Quebec, June 8, 1881, one-fifth of the city burned, loss \$2,000,000.

The commercial failures in the United States in January, according to reports received by R. G. Dun & Co., numbered 1406, with an aggregate defaulted indebtedness of \$18,483,573, as compared with 1269 failures in January, 1903, for \$12,978,979. Of the 1406, 271 were of manufacturers, for \$6,687,637. On account of annual payments and inventory disclosures, January is usually a month of many failures, but careful comparison shows that losses last month were heavier than in the corresponding month of any year since 1896, and heavier than in any month since May, 1900, excepting, only, December last.

#### Scotch Industrial News.

GLASGOW, January 28, 1904.—The chairman of the Cunard Company, Lord Inverclyde, when presiding at the James Watt anniversary dinner here a few days ago, had much to say about engineering and shipbuilding industries. Going back for only a comparatively brief period, he noted the remarkable developments that had taken place in these industries. In Williamson's book dealing with the memories of James Watt, it was pointed out as marvelous that in 1855 ships were being built of such a size that they cost from £40,000 to £120,000. Now we have ships costing ten times the smaller sum, and often more than five times the larger sum. An important question in the future is as to the consumption of fuelwhether we are to get an increased power with a smaller consumption or in what direction to find economy. As a ship owner, Lord Inverclyde indicates one matter with which there must be great developments—namely, the question of stoking at sea. It is quite impossible, he thinks, for matters to go on as at present on ships carrying such very large quantities of coal as they now have to do for long voyages. There is a great fortune in store for the inventor who can produce a mechanical stoker which will meet the requirements of the case.

#### The Iron Market

Last week the Glasgow pig iron market was flat and the price of Cleveland warrants receded to 41 shillings 91/2 pence, but this week it is somewhat firmer, and at time of writing the price is 42 shillings 5 pence. Cleveland makers are not following the downward course of warrants, the current quotations for No. 3 being. at furnace, 42 shillings 6 pence per ton. Consumers, as is usual in a falling market, have not been placing many orders. The reports received here from America are quieter, but prices there are still too high to permit of sales to Europe. Semimanufactured material, however, continues to be freely offered, and the German syndicate have increased the bounty on export steel to enable manufacturers to meet the American competition. There have been few transactions in West Coast hematite warrants in the neighborhood of 52 shillings 9 pence, and makers' prices vary from 53 to 54 shillings per ton, f.o.b. Middlesbrough hematite is somewhat easier at 51 shillings 6 pence to 51 shillings 9 pence, and Scotch steady at 55 shillings to 55 shillings 6 pence per ton, delivered to the steel works in the respective districts. While Cleveland makers are firm in their quotations, it is said that just before the last drop in warrants they sold three months' warrant Iron pretty freely. As for Scotch makers, they disregard warrant iron entirely and appear to be able to send all their output into consumption without difficulty. The following are current prices of Scotch makers' iron:

8. d.	
G. M. B., f.a.s., Glasgow, No. 1	
Monkland, f.a.s. Glasgow, No. 1	
Coltness, f.a.s. Glasgow, No. 1	
Langloan, f.a.s. Glasgow, No. 1	
Summerlee, f.a.s. Glasgow, No. 1	
Calder, f.a.s. Glasgow, No. 1	
Gartsherrie, f.a.s. Glasgow, No. 1	
Shotts, f.a.s. Glasgow, No. 1	
Clyde, f.a.s. Glasgow, No. 1	
Carnbroe, f.a.s. Glasgow, No. 1	
Glengarnock, f.a.s. Ardrossan, No. 1	
Eglinton, f.a.s. Ardrossan, No. 1	
Dalmellington, f.a.s. Ayr, No. 1	
Middlesbrough, G. M. B., f.o.b. Tees: No. 1, 43 shillings	
6 pence; No. 3, 43 shillings 3 pence; No. 4 foundry,	
42 shillings; No. 4 forge, 41 shillings 9 pence.	
W. C. hematite, mixed numbers, 53 shillings, f.o.b. Cumberland or Barrow.	
E. C. hematite, mixed numbers, 51 shillings 6 pence per	

ton f.o.b. Tees.

botch hematite, mixed numbers, 55 shillings 6 pence f.o.t. steel works.

The stocks in Glasgow warrant store are 9000 tons, in Middlesbrough 103,000 tons and in the Cumberland hematite stores 24,500 tons. Hematite makers also hold a good deal, but makers of other sorts not much.

One hears of malleable iron makers booking a few more orders for finished iron and of steel makers selling more steel plates. Whether this is new business or merely a location of deferred orders is doubtful. The steel trade are in rather a queer position, as middlemen are resenting the combination among manufacturers to retain a minimum standard, and are endeavoring to break down the combination by offering plates and angles at 5 shillings per ton under the agreed rate. The result of this bear raid will be interesting, for, of course, consumers encourage the bears. At present the prices of hematite and of foreign steel billets are rather in favor of the bear sellers of plates, but there is no margin yet on which to bring plates here from England. Some more contracts have been secured here for new ships, perhaps more than has been reported, though not so many as in the northeast of England.

In the northeast district American forge or mill pig iron is coming upon the market in competition with local In billets, American sellers are again coming to the front and shading their prices to cut out German makers, the price, delivered at Manchester docks, being quoted £3 19s., and sheet bars at about £4, which brings them about a couple of shillings below German billets. For English billets quotations are about £4 10s. to £4 12s. 6d., but large buyers will not give more than £4 7s. 6d. In steel joists, Belgian makers are delivering at Manchester docks at £4 14s., f.a.s. Common plates have hardened and are not now quoted under about £6 to £6 2s. 6d., but prices all through remain extremely low. Engineering continues unsatisfactory. With few exceptions, engineering establishments are short of work, and running out orders in hand much more rapidly than they are being replaced.

#### Shipbuilding.

It is just about a year since a movement began here to reduce wages in the shipbuilding yards, which had a peaceful settlement, except in the case of the machinists, who unsuccessfully attempted a strike. The movement is now being revived. The shipbuilding employers in the Clyde district have intimated to the general secretary of the Boilermakers' and Iron Shipbuilders' Society that they propose to reduce the wages of all iron workers employed on the piece work system by 5 per cent. reduction is proposed to take effect after the usual period of notice in February. It is of the same amount as that proposed by the northeast coast employers, and agreed to by the men there, and it is anticipated that the Clyde men, too, will accept the reduced rates. though the operatives will protest against the reduction, it will likely be agreed to. Trade is becoming more and more depressed, and the number of idle men is increasing. No proposal has yet been made here for reducing the wages of machinists. This has been done on the northeast coast, and it will probably be done on the Clyde at an early date. The notice now given applies only to all iron workers, members of the Boiler Makers' Society, and others (except men in the boiler shops who come under the Federation of Engineering Employers) who are working on piece work. No proposal has been made affecting the wages of the time workers, who, however, are few in number.

The London & Glasgow Shipbuilding Company, Limited, Glasgow, have launched H. M. S. "Roxburgh," the third of three "county" cruisers ordered from them for the British Navy, having a displacement at load draft of 10,700 tons; indicated horse-power, 21,000; speed, 221/4

The turbines which are to be fitted into the three-propeller Allan liner "Victorian," now being built at Belfast, have been specially designed by Mr. Parsons, as a modification of his earlier designs, to suit the requirements of the Atlantic passage. They will have great power both for forward and backward movement, the reversing power being, by a special arrangement of Mr. Parsons, equal to that of the propelling power and capable of securing almost instant arrestment of the ves-sel's speed. In this matter the "Victorian" is intended to surpass a steamer propelled by ordinary engines. turbines are to be constructed at the works of Workman, Clarke & Co., under Mr. Parsons' supervision. sel is now well advanced and is to be ready for her station in the autumn of the present year. She will be by far the largest steamer, as she will also be the swiftest, of the Alian Line fleet. She will be fitted in the most modern style for upward of 1500 passengers, and is expected, by the absence of vibration and the rapidity and steadiness of revolution in her shafting and propellers, to be noiseless and steady in a seaway, even while exerting all her great power.

Professor T. Hudson Beare, M. Inst. C. E., Professor of Engineering at Edinburgh University, has been lecturing on

#### The Thermal Efficiency of Heat Motors.

The great growth in engineering trials and engine testing has made it necessary to establish standards of comparison, and the Institution of Civil Engineers appointed a committee in March, 1896, which reported in April, 1898, to draw up standards of comparison. For the purpose of comparing one engine with another they suggested an imaginary standard engine should be set up, and that the ratio of the performance of the actual engine to this standard engine should be termed the efficiency ratio. This standard engine selected is one working on the cycle known as the Rankine cycle. As a corollary to the work of this committee the institution appointed a second committee, to which Professor Beare acted as honorary secretary, and the report of that committee has recently been accepted and is now in process of publication. It will extend to a volume of over 100 pages and will contain the standard forms drawn up by the committee for recording the results of engine and boiler trials.

The report contains exhaustive descriptions of the methods of carrying out such trials, the apparatus to be employed, the methods of testing such apparatus for accuracy and complete explanations of the way in which from the data obtained the heat balance can be calculated. If such standards had been in existence 20 years ago, scores of trials, the results of which are now of little value, would have been made available for those who are studying the question of the economy of heat engines. Professor Beare examines the best results which have been obtained in heat motors up to the present day, and in this respect the palm is held by the Diesel heat motor. As to probable future advance, it is difficult, if not impossible, to forecast the lines upon which it will proceed, but there are two developments which will do much to reduce coal consumption-the one the extended use of superheated steam and the other the suppression of the small motor and the establishment of large central works from which power can be distributed electrically to the numerous small consumers. The steam turbine will probably find its best use in the facility it will give for the establishment of such stations and in rendering possible higher speeds with less vibration on steamships. It does not necessarily mean any increased economy in steam consumption when compared with reciprocating engines of the same power, although this is expected. B. T.

#### Central American Notes.

SAN JOSE, C. A., January 30, 1904.—Freight by all rail routes to these Pacific countries will, before long, be a fact, and those sections not included in the all rail lines will be aided by the Hamburg-American steamers. The first connection of this line will be at Topolobampo, to which point the Kansas City & Orient Railroad is now building. From this port these steamers will ply southward to Acapulco, Manzanillo, Ocos, Acapitla, Panama, &c., thus taking in most of Central America as far as the isthmus. Another line of railroad from our Rio Grande border will go through Durango, Coahuila, to Mazatlan port. Still another, in connection with the Southern Pacific Railway, will penetrate Mexican California, and at San Diego the Central American liners will touch The narrow steel line is the only way to open weekly. up these vast rich regions to American commerce. Luckily the Latin-Americans are understanding the reasons of their isolation, and they now welcome the idea of a Pan-American railway that will put Nicaragua, Guata-mala, Honduras, Costa Rica, Salvador, Panama, Colombia, Venezuela, Ecuador, Peru, Bolivia, Brazil, Para-guay, Uruguay, Chile and Argentina in railway communication with the United States.

It is wrong to suppose that these people do not ap-

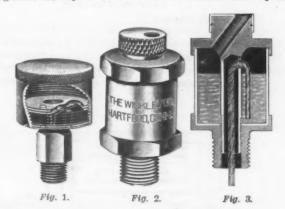
preciate modern ideas, commercial progress and all that reciprocal trade means. They are quick to adopt our machinery on their coffee, sugar, rice and other plantations. Their mines of gold, copper, silver and lead are gradually turning to American machinery to develop mineral and pump out the accumulated waters of ages. They now point to the great results of American pumping machinery in the Sombrerete and Guanajuato districts.

It is reported that the Pearson Syndicate, who are reconstructing the Tehuantepec Railway from Coatz-coalcos to Salina Cruz, will use American dredgers and other machinery on the rivers which have lately been spanned. The hydraulic and other work by the American contractors at the Port of Manzanillo is progressing, and all work is expected to be finished by the time that the Mexican Central reaches Colima district.

The estimates made lately by the railroad surveyors for the Mexican extension of the Pacific Railroad to the borders of Guatemala have failed to consider the enormous ranges and torrential rivers in the latter country, where bridges must be of the largest as well as of the best and most substantial make. There are many miles which will cost as much as the (American) Oroya-Peru Railroad. As much as \$250,000 a mile will not be too high an estimate through Oaxaca, Chiapas, Guatemala and southern sections.

#### The Winkley Grease and Oil Cups.

The latest grease cups for lubricating, manufactured by the Winkley Company, Hartford, Conn., possess a novel feature in a packing ring of elastic material, which is split in such a manner as to cause a tight pressure against the cap when the latter is screwed on. By this



WINKLEY GREASE AND OIL CUPS.

means it is claimed that no grease can work out and be wasted, or be in a position to gather dust and dirt, making the lubricator unsightly. Another feature of the split ring is that by expanding it acts as a check, giving sufficient resistance to retard the cap from unscrewing. This cap has an advantage in that it is not likely to work loose when subjected to considerable rattling and shaking, making is a desirable form of lubricator for use on automobiles. The construction of the cup is shown in Fig. 1. The packing ring is held in position by pins. slightly smaller than the holes in the ring with which they engage to allow a small amount of rotation. motion also obviates the tendency to unscrew and saves the wearing of the thread, a common fault of the old forms of grease cup when under constant vibration.

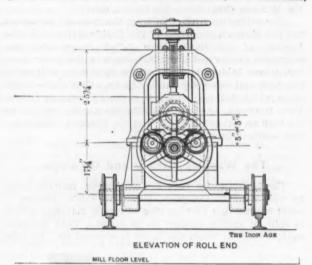
Figs. 2 and 3 show another form of lubricator, known as a constant feed reservoir oil cup. Points aimed at in its construction are to make it nearly perfectly dust proof, and to allow it to be easily taken apart for cleaning. The method of feeding the oil provides a continuous gradual discharge into the bearing, which is far more desirable than to flood it once with the probability that it will soon run dry. To fill the cup the knurled cap is rotated until its opening registers with the oil duct leading to the interior reservoir. While the cup is particularly adapted for use on running gears and the axles of automobiles, it will also meet a considerable demand for general machinery purposes.

### The Manufacture of Welded Pipe.-II.

BY VICTOR BEUTNER, PITTSBURGH, PA.

#### The Machinery.

We come now to a discussion of the machinery proper, which serves to convert a piece of skelp into a marketable tube. For the manufacturing of lap welded pipe, the princple of which has been alluded to, two furnaces are required, one to heat the flat skelp for the bending operation, and the other to heat the previously bent skelp to a welding heat. The skelp is charged into the first, or bending furnace, either in single strips, or in piles, until the hearth of 7 or 8 feet width, of the furnace.



10, show such scarfing rolls mounted again on wheels for lateral motion to suit the situation of the skelp in the furnace. The rolls have a beveled collar on opposite sides, the beveled surface of which forms the scarf, and can be laterally adjusted to suit the distance between collars to the width of the skelp.

Another style of scarfing rolls is stationary with rolls of the same length as the width of the furnace, and with a number of passes in the top roll to correspond with the size and number of pieces in the furnace. In the first case, one or at most two sets of rolls will cover the full range of sizes, while in the second case, a separate top roll is required for each size of skelp handled. The second style, however, obviates the necessity of a side motion and scarfs the skelp to a sharp edge, while the collars of the sliding rolls are turned to suit the thickness of the smallest skelp, and larger sizes are scarfed by raising the upper roll sufficiently for the greater thickness, the scarf in this case becoming blunt.

A scarfing table receives the scarfed skelp and transfers it sidewise until in line with the bending bench, when it feeds it forward into the bending die. The bending die is a large cast iron funnel shaped affair into which the skelp is drawn by strong gripping tongs, which are hooked to the endless chain of a draw bench. The construction of the draw bench can be readily seen from the accompanying drawing, Fig. 11. To avoid the lateral transfer of the skelp on the scarfing table, the scarfing rolls, scarfing table and draw bench are in some mills mounted on one carriage. The largest size of skelp, which can be successfully bent in dies without collapsing, is 12-inch pipe skelp, and few mills attempt to bend above Where larger sizes are desired—and we have 10-inch. to-day two mills in operation which can roll 30-inch pipe, and several more in course of construction-the skelp

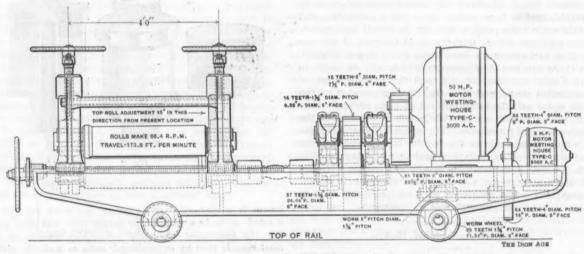


Fig. 9.—Scarfing Rolls

is covered. For this purpose a bench or table equipped with a chain running over sprocket wheels is used, upon which the skelp is deposited by the crane. The table has a lateral, or sidewise motion, which permits it to be placed opposite any point of the full width of the furnace hearth. A hook or pusher rod is dropped into the links of the traveling chain and the skelp shoved into the furnace. A longer rod is used in the same manner to push the heated skelp through the furnace into the scarfing rolls.

#### Scarfing Rolls.

When the two overlapping edges of skelp are united by welding, it is evident that either an extra thickness of material on this joint must appear, or that the pressure between the welding rolls and the ball must become very severe. To avoid either disadvantage, the skelp is scarfed—that is, its edges are beveled off—thus allowing in the lap the same contact surface, but less material. Originally this scarfing was done by cutting on machines built somewhat like plate planers, but this method has been surpassed by the far simpler process of scarfing in rolls. The drawing, Fig. 9, and the photograph, Fig.

has to be bent in rolls, designed in general on the same lines as boiler bending rolls, but lately equipped with power feed, hydraulic pressure, and other improvements to operate same quickly and positively. Such rolls are usually situated parallel to the scarfing table, the lateral motion of which is increased sufficiently to drop the scarfed skelp sidewise between these rolls. Large sized skelp is usually tacked together by a rivet or two on each end to keep it from collapsing in the welding furnace.

#### The Welding.

The bent skelp is deposited on skids, conveniently located to the welding pit, as the depression on the charging side of the welded furnace is usually called. In this pit the hardest work and the work requiring the greatest skill is performed. The welder and his assistants charge the skelp, which has gone immediately before through the described process of bending, and is still red hot, through openings in the end walls into the furnace. The hearth of the welding furnace is slightly inclined towards the welding pit to cause the cinder to run off freely. The center of the hearth, which is in later furnaces over

7 feet wide, is occupied by the gutter in which the pipe, which is ready for the welding, rests. The charging openings are on both sides of the gutter, and the charged skelp is rolled over several times to expose all parts to the heat before it reaches the gutter, when the overlapping edges

will weld a pipe every 30 seconds, that he has to superintend the charging and the pushing out, in addition to regulating his furnace, that he is further responsible for the good production, that he must guard against burning his pipe, or shoving it out before it has reached the proper

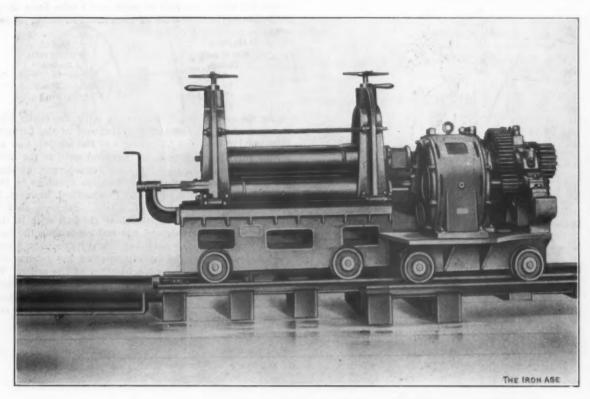


Fig. 10.-Movable Motor Driven Scarfing Rolls.

must be on top. According to the sizes of the pipe and the skill of the welder, two, three or five skelps are simultaneously in the furnace. As soon as the skelp in the gutter has acquired welding temperature, it is pushed out through the opposite end of the furnace, until the welding heat, in which case it would either stick in the rolls or weld imperfectly, you will realize that the job of welding is no sinecure. The designers of modern mills especially intended for the production of larger sizes have provided mechanical appliances for charging and pushing out, but

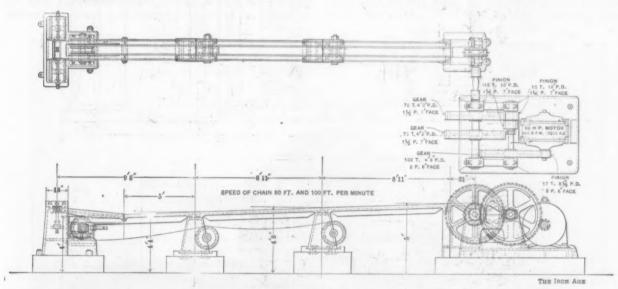
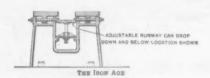


Fig. 11.—Plan and Elevation of Draw Bench.



Section through Center Line.

rolls, situated as close as possible to the furnace, grip it and force it over the welding mandrel—the ball. When you remember that of the smaller sizes a good welder the skill and responsibility of the welder are thereby not lessened.

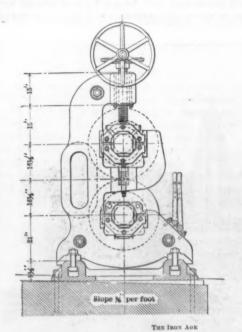
The drawing, Fig. 12, and the engraving, Fig. 13, show design of the welding rolls clearly. Pinions located in separate housings, pressure screws, bearings with side adjustment and counterbalanced rolls and many other improvements in use in general rolling mill practice, are used here. The rolls run at a very high speed, the velocity of the welded pipe reaching as high as 800 feet per minute. The ball, shaped somewhat like a cannon shell, is supported by a rod of much smaller diameter in

exactly the center between the rolls. The pipe passes through these rolls, seam on top, the welding being effected by the pressure between the top roll and the ball, the drawn from within the pipe, the ball dropping down in the front, and after inspection the pipe is either returned over the second run trough for a second welding, or sent forward in its course.

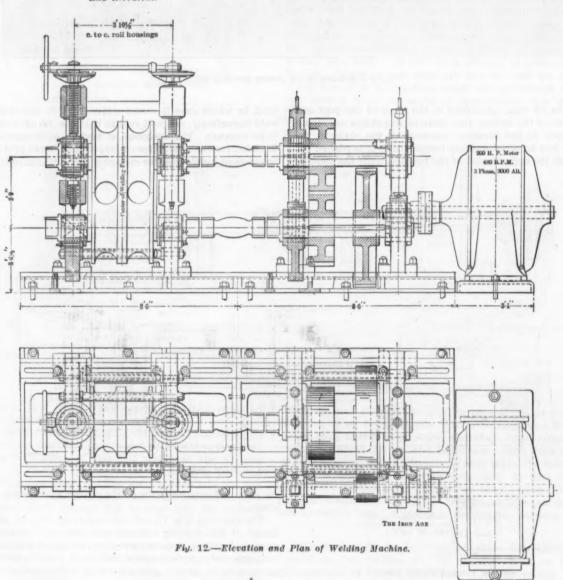
The size of welding rolls depends much upon the range for which the mill is built, and varies from 24 to 36 inches between centers of rolls and increasing as follows:

Maximum	Size of
size of pipe.	welding rolls.
Inches.	Inches.
6	24
10	28
16	33
24	36

By the method employed in most mills, the faulty pipe is returned to the front or charging end of the furnace, thus putting it under full control of the welder, and allowing him to recharge it for a second weld at the most opportune moment. In some mills second runs, as they are called shortly, are charged through openings in the rear or roll end of the furnace. This method, however, is bound to cause confusion and delays. Stickers, that is pieces which instead of sliding over the ball stick in the rolls, must be removed, and the end containing the ball must be cut off. After this they might be recharged and welded over, unless the remaining piece has become too short to comply with the specification of the order. assure a safe weld, an Eastern mill uses two sets of welding rolls, and balls placed tandem close behind each other. This arrangement, however, is cumbersome, and has not been adopted elsewhere.



End Elevation



ball in turn being supported by the lower roll. The welded pipe slips completely over the ball, resting in the welding trough. By means of friction rollers the bar is withWith the perfection of the Siemens Furnace it became apparent that a greater number of the smaller sizes could be welded than one set of welding rolls and bar puller could take care of, while with the larger sizes the operation of welding became slower and the machinery usually ran ahead of the furnace. To increase the rolling capacity of small pipe, say below 6 inches, two gut-

Fig. 15, the rolls are overhung, allowing a quick change of rolls, but lacking the stability of the first design. The grooves both in the welding and the sizing rolls are round, corresponding to the outside diameter of the pipe.

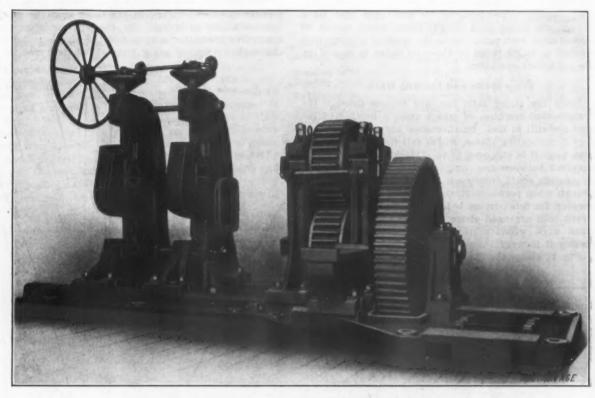


Fig. 13 .- Welding Rolls, Top Roll Bulanced, 24-Inch Pipe.

ters in the furnace were substituted for one and double sets of welding rolls, or welding rolls with double grooves were introduced, thereby increasing the output of a furnace considerably.

#### Sizing Rolls.

After the pipe is welded, it is passed through a set of sizing rolls, where it is reduced to the exact outside diam-

The greatest work in the welding rolls is done at the bottom of the groove, where the lap is united and the extra metal reduced. Welding rolls therefore wear out at the bottom of the groove first, and can be dressed by merely reducing their diameter. Sizing rolls, on the other hand, wear out on the side flanges of the groove, owing to the friction caused by the different circumferential speed

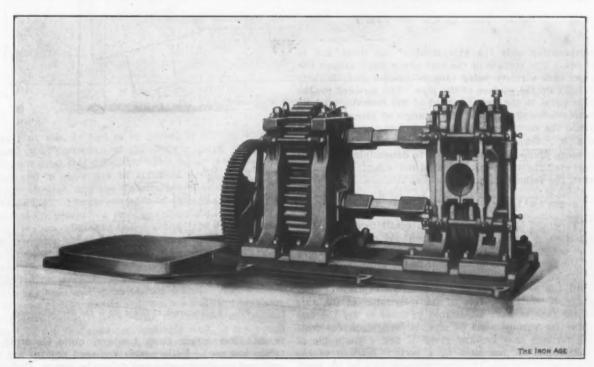


Fig. 14.—Sizing Rolls, with Separate Pinion Housings, 4-Inch Pipe.

eter required. Two designs are in universal use. According to one, the rolls are carried between housings, which are built lighter but otherwise very much like welding rolls. This is shown in Fig. 14. In the second style,

of the bottom and sides of the groove, and are therefore built in halves, split through the bottom of the groove rectangular to their axis, and can be dressed by taking a small cut off the face of this joint, bringing the flanges of the groove sufficiently together, to be turned again to a true circular pass.

Smaller sizes ought to receive but one pass through the sizing rolls, and the rapidity with which one piece follows the other makes it indeed prohibitive to do otherwise. Large pipe, however, is sent back and forth through the sizing rolls several times, being turned 90 degrees after each pass. Since the welding of large pipe requires a longer space of time, no delay is caused by this method of operation.

#### Cross Rolls and Cooling Rack.

From the sizing rolls the pipe travels through the straightening machine, of which quite a number of designs are still in use. Smaller sizes are passed between large reciprocating plates, which roll the pipe back and forth until it is supposed to be straight. Or the pipe is deposited between two long cylindrical rolls, set just far enough apart from each other to let the pipe drop through when perfectly straightened. The best method, however, for this purpose is to pass the pipe through two curved rolls arranged above or beside each other on inclined axes, which rotate the pipe, at the same time pushing it forward.

Fig. 16 shows the theory of this appliance. To avoid

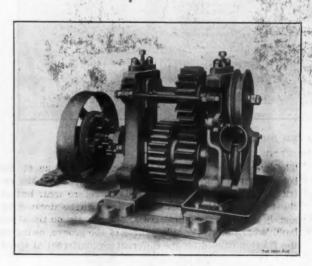


Fig. 15 .- Sizing Rolls, Overhung Type.

complication only the axis B B of the lower roll is shown. The surface of the roll wraps itself around the pipe, both surfaces being tangent along a line which is a helix on the surface of the pipe. The forward motion S is equal to the surface speed of the revolving roll Rr multiplied with the sine of the angle of intersection  $\alpha$ , while the surface speed of the revolving pipe  $Rp=Rr\cos$ .  $\alpha$ . Owing to the varying diameter of the roll an average diameter must be taken in determining Rr. The curve of the roll proper is a rather complicated affair with the following equation:

$$y = \sqrt{x^* t g^* \propto + a^!} \left[ 2 - \frac{d}{\sqrt{x^* \sin^* \propto + a^!}} \right]$$

It would lead us too far into detail to develop this equation, especially since it is without practical value. The proper way of turning the rolls is to fasten a bar of the proper dameter above it in the lathe intersecting it under the proper angle, and then to finish the roll until the proper contact has been accomplished. The angle at which the axes of the rolls intersect the axis of the pipe is made adjustable, in order to use the machine for various sizes of pipe, it being apparent from the formula that for any given X and Y the angle of intersection 

intersection 

intersection of increases in a certain relation to the diameter of the pipe D. A set of these rolls, of the vertical type, is shown in Fig. 17, while Fig. 18 shows the horizontal type.

From the cross rolls the pipe is brought upon a cooling bed, upon which it slowly travels sideways, while it is held by a number of fingers of the traveling chains until it is cooled sufficiently to avoid the danger of hav-

ing its shape again disturbed. The speed and angle of friction are usually figured, that as an additional precaution the pipe rolls around its own axis while traveling over the bed.

The troughs, transfers and other means to carry the pipe from one operation to the other must be shortly discussed. In mills built for the smallest sizes these appliances are rather simple, and the pipe is rolled over the skids or pushed along simple V-shaped troughs by

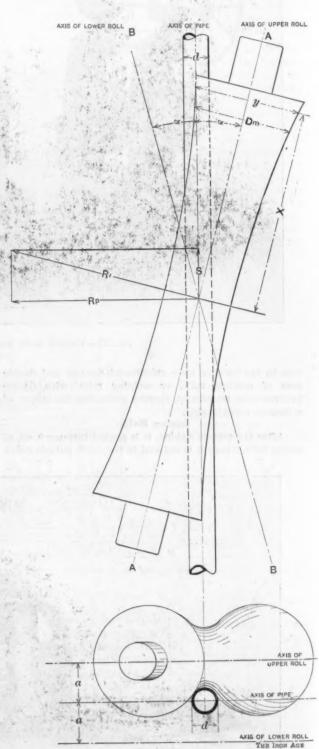


Fig. 16.—Diagram of Cross Rolls for Straightening.

hand. For larger sizes, however, quite elaborate designs are used. Rollers with V-shaped grooves are substituted for the troughs, and driven by power. Hydraulic cylinders lift the pipe by means of arms and levers from one position into another. Automatic charging troughs pick up one piece of skelp at a time from the skids and bring it in front of the charging openings, whence an overhead rope driven, or a direct acting steam pusher shoves it into the welding furnace. When the arrange-

ment of the mill necessitates a turning end for end of the skelp this is also done automatically by one motion of a hydraulic ram. In all these cases it has been the intention of the designer not so much to cut down the number of the working force, for valves and controllers must be operated, but to substitute the indefatigable power of mechanical appliances for that of human beings, who could not stand the hard work in handling larger sizes, nor the rapid pace of a modern pipe mill for ten hours per day, practically without intermission.

The application of power to drive the various machines used in the manufacture of pipe has presented an interesting problem. A modern lap weld mill arranged to roll from 8-inch to 16-inch pipe contains no fewer than 19 individual machines, requiring various horse-powers ranging from 5 to 250. Line shafting with belts or gears, and an occasional isolated engine, were first universally used. At the best, line shafts with hangers and belts and steam pipes are a nuisance in a rolling mill, and here they either occupied valuable space overhead, obstructing

#### Power Equipment.

The following table will show the horse-power required for each operation:

La	p Weld Mil	la.*	
	Pipe.	Pipe.	Pipe.
	to 8 inch.	8 to 16 inch.	16 to 30 inch.
H	orse-power.	Horse-power.	Horse-power
	motor.	motor.	motor.
Charging bench	2 of 3	2 of 5	2 of 5
Scarfing rolls	1 of 40 1 of 3	1 of 50 1 of 5	1 of 50 1 of 5
Scarfing table	2 of 8	2 of 5	2 of 5
Bending bench			(0-4 90
Bending rolls		1 of 30 3 of 5	2 of 30 3 of 5
Pusher	1 of 5	1 of 5	1 of 10
Welding rolls	1 of 150	1 of 250	1 of 300-
Bar Puller	1 of 5	1 of 5	1 of 10
Size rolls	1 of 30	1 of 40	1 of 50
Cross rolls	2 of 15	2 of 20	2 of 20
Troughs, up to	4 of 3	4 of 3	4 of 5
Cooling rack	1 of 3	1 of 5	1 of 10

• If double grooved rolls are used, the motor had better be 200 horse-power.

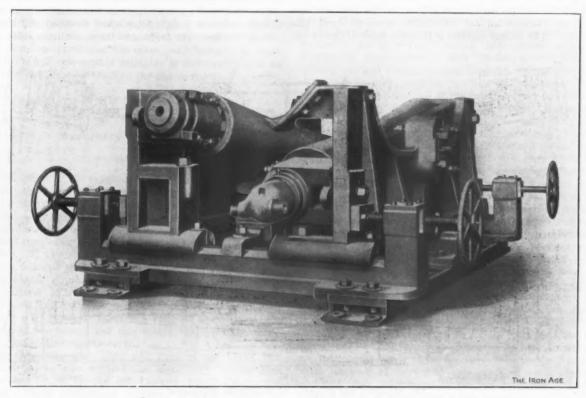


Fig. 17 .- Cross Rolls, Vertical Type, 24-Inch Pipe.

everything else, or had to be buried in ditches hard of access. The perfection of the electric motor of various systems solved this difficulty. The motor occupies little room, and is made now of approved design, in a great variety of sizes, and the distribution of power is easily accomplished. The larger units of dynamos and engines required for generating the power, situated usually in a power station, allow the use of better type of equipment, and therefore higher steam economy. It would lead us too far to discuss the various types of motors, but in all installations of pipe mills with which the writer has been connected the Westinghouse 3-phase A. C. induction type motor has been used with perfect success. The absence of collectors, commutators and brushes and the heavy copper strip winding, together with its compact mechanical design, adapt this motor exceedingly well to the rough work in pipe mills. The great flywheel effect of the larger motors caused by the high speed and great weight of the revolving parts is of considerable benefit in cases where the work is done only for few consecutive seconds at the Variable speed is not required in pipe mill work, and, where necessary, the reversing of the motors can be readily effected by mechanical means. The difficulty to get several units of the dynamos to run "in step" has been successfully overcome.

	Butt	Weld	AZ Sec.	
Clip Shear				motor.
Clip Shear				1 of 5
Draw bench				11 of 3
				(1 01 00
Size rolls				
Cross rolls				2 of 10
Cooling rack				1 of 3

To furnish the power to these motors a dynamo equipment of about one-half of the aggregate horse-power is required. The greatest unit, the welding roll motor, requires its maximum power for less than two seconds at the time, but very often the power required to weld difficult pieces exceeds the rating of the motor, and, if possible, this overload ought to be taken care of by the fly wheel effect of the welding machinery, and not be thrown suddenly on to the dynamo and engine.

In many cases the threading machines have been equipped with individual motors, but the difficulty to obtain variable speeds, unless inded a complicated variable speed system is employed, the small size of each unit, ranging from 2-5 horse-power, and the greater cost of installation make it preferable to employ line and counter shafts and a belt drive. The advantages will be especially great where, as suggested above, a separate building is provided for the threading machines.

It is possible to build a lap weld mill to cover a great range of sizes, and in isolated mills this might be advisable. The economical range of such mill—that is, the range of sizes within which the mill reaches its greatest output—is much more limited, and ought certainly not comprise a greater variety of sizes than given above in the table for the power equipment.

#### The Butt Weld Mill

The machinery of a butt weld mill does not differ materially from the machinery described. Clipping shears are located conveniently at the charging end of the furnace, which clip the front corners of the skelp under an angle of 60 degrees, leaving it about one-third of its original width. The skelp is charged over the whole width of the furnace hearth, strip beside strip, and as fast as the welder pulls out one piece a new one is charged in its place. The draw bench is of very similar construction to the one used for bending skelp, but the chain travels very much faster, reaching often a speed of 400 feet per minute. Rope has been substituted for chain with indifferent success. The bench travels sideways across the full width of the furnace, or is pivoted on its rear end and swings through an arc sufficiently large to cover this width. The second method is inferior, since it draws the

ery for the latter are built very much lighter and of greater simplicity. The skelp is heated and bent in a separate equipment in very much the same way as in the lap weld process. The balance of the equipment and process resembles the bell weld method, substituting the tongs shown in Fig. 1 for the bell, and only welding one-half of the pipe at the time. The sizing and straightening machines and the cooling rack through which the pipe travels after being welded are constructed on exactly the same lines as in lap weld work, making allowance, of course, for the greater speed and lighter work.

#### Pipe Couplings.

A few words must be said here as to the manufacture of pipe couplings or sockets, as they are called in pipe mill work. Strips of skelp of the width of the socket and of a length to suit its circumference are heated, bent and welded into a ring. For smaller sizes, coal heated fires are used, while the larger sizes are heated in small regenerating furnaces. The bending and welding is done either in machines by a system of rollers, or by steam and trip hammers in dies. Hydraulic mandrels are forced into them to give the proper taper to their bore in both directions, to insure a tight joint when threaded and screwed on to the pipe. The tapping of these couplings takes place.

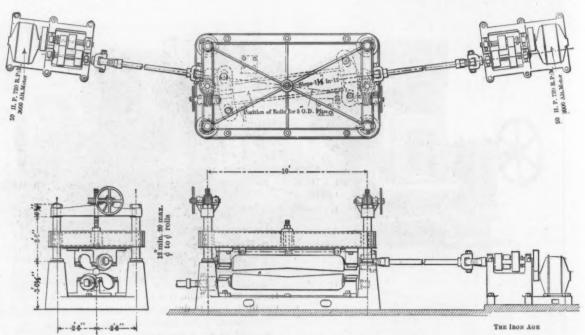


Fig. 18.—Plan and Elevation of Cross Rolls, Horizontal Type.

skelp out under an angle, and in addition is covered by a strong patent. The welder stands on a platform attached to the front or furnace end of the bench. He takes a bell, slips it over the tongs, grips the skelp in the furnace with these tongs, and hooks them to the traveling chain. The bell is pulled against a steadying rest, and the tongs first and then the skelp is drawn through its opening, the latter being bent and its edges forced against each other to a firm weld. Several boys assist the welder in unhooking the tongs at the proper time, cooling and cleaning the bells and supplying the welder with both as fast as he needs them. And he does need them pretty lively, since 2500 to 3000 pieces of 1-inch butt weld pipe in ten hours are considered a day's work.

It can readily be seen that a substantial design of the tongs is impossible, where they have to pass through the very small opening of the bells as used for the smallest sizes of pipe. In this case, a short piece of round iron is welded to the end of the skelp, brought through the opening of the bell and gripped on the other side of it by the tongs. This process is called "tagging." Owing to the greatly reduced tonnage, mills are not very anxious to roll these small sizes, and either refuse orders for them, or, if ordered by one customer with a large order for larger sizes, purchase them from mills which either make a speciality of tagging or manufacture by the tong process, which has been described above. Furnaces and machin-

in multiple tapping machines of the same general type as seen in machine shops, only built stouter and heavier to stand the rough work.

After the pipe comes from the cooling rack it is inspected, and, it necessary, any kinks or bends taken out by a straightening press, built on the lines of the ordinary punching press, or operating by hydraulic power. pipe is then distributed to the threading machines, which cut off the rough ends and cut the threads, if such is de-There is a great number of threading machines in the market, all claiming certain advantages, but all built on the general well known lines of these machines. It must be said, however, that such machine, in order to do 20 hours of fast work every day under not very favorable conditions in a pipe mill, must be built far heavier and far stouter than the ordinary jobbing machine used in machine shops. Rotary shears have been used lately with great success to cut the crop ends, and have thus greatly relieved the work of the threading floor. leaving the mill every piece of pipe is subjected to a test by hydrostatic pressure, varying according to the size and purpose of the pipe from 300 to 3000 pounds per square inch. On a bed, built similar to a lathe bed, one stationary and one moving head are mounted. The pipe is inserted between the two, the moving head brought forward until a tight joint is effected. The pipe is then filled with water from an ordinary supply line, and by means of

a three-way valve pressure of the desired intensity is applied. Only pipe passing the specified test is allowed to leave a modern mill.

Great difficulty was formerly incurred in varying the testing pressure through such a great range, and a combination of a number of pressure pumps and accumulators with detachable weights became necessary. Lately hydraulic regulating valves have been put upon the market and used very successfully, which, by means of springs, the tension of which is adjustable, cut off the steam supply of the pump as soon as the desired hydraulic pressure to which the valve is set has been reached.

So far in this paper, wherever sizes of pipe have been given, the ordinary standard pipe has been referred to. It is well known, however, that a great variety of pipe is manufactured, differing not only in outside diameter but also in thickness of metal. These sizes can be readily found in any price-list or hand-book. The manufacture of those types which, like boiler tubes or well casing, differ from the standard pipe mainly in the smaller thickness of metal, is the same as that of standard pipe, requiring only greater care in heating and welding. The extra and double extra heavy pipe used in hydraulic and other high pressure work is also manufactured in the same way, unless the thickness becomes too heavy and the opening too small. In this case jacketing is resorted to-that is, one pipe is slipped over the other, both brought to welding heat, and the outside diameter is sufficiently reduced to weld the inside surface of the one to the outside of the

(To be continued.)

#### Machinery for Panama.

BY GEORGE E. WALSH.

The effect of the building of the Panama Canal on the machinery market is foreshadowed by numerous inquiries as to the possible cost and supply of certain classes of machines to be delivered on short notice. The building The building of the canal by an American company would begin within a short time after the final contracts and agreements were It is believed that contractors could go down to the isthmus within a month after the United States Government acquired full rights to the canal and its concessions. There are good housing accommodations for 15,000 to 20,000 workmen, which could be put in order within a few weeks. There is a railroad along the whole length of the canal, and this would facilitate the work of beginning operations early.

In acquiring all rights and title to the canal, the United States also secures the machinery, houses and other equipment of the old Panama Canal Company's These possessions represent a great variety of machinery, boats, dredges and supplies. It is conservatively estimated that some \$20,000,000 worth of machinery and other equipment is decaying on the isthmus. The first canal company were extravagant in their purchases of machinery, and several times as much as could ever be used were shipped to the isthmus. When the last United States commission visited the canal it made a hasty inventory of this machinery, but it recommended to the Government that no attention be paid to its exist-ence, for in all probability it would be good for nothing except junk. It is now about a quarter of a century since this machinery was shipped to the isthmus, and in all that time it has been exposed to one of the worst climates in the world. Iron and steel rust and decay rapidly in Panama, and within a few years it becomes almost worthless unless protected in some way. are machine shops scattered along the line of the canal. equipped with steam hammers, cutting and sawing tools and nearly all varieties of small machines, which are in a fair state of preservation, owing to their protection by the buildings from the climate. But outside of the machine shops the condition of the machinery is as unsatisfactory as can be.

A good deal of the machinery that has been preserved is of antiquated pattern, and would hardly prove of any It is doubtful if it was of much value at this time. use at the time of shipment. So much fraud was in-

volved in the purchase of goods for the old company that it is not strange to find that some of the machinery bought was of little use. Of the locomotives alone there were 100 or more shipped to the isthmus and never used These were purchased in France, Belgium and Great Britain. For the most part they were badly adapted to the work required of them, being too small and weak for hauling the loads of material from They are certainly much lighter in the excavations. weight than any locomotives used in constructive work The wheels of the locomotives and cars all have narrow treads, and the rails themselves are too light to stand the traffic required of them. Yet there are thousands of tons of these steel rails piled up along the line of the canal route, and their exposure to the weather for 25 years has about ruined them. The machinery purchased includes some \$2,000,000 worth, shipped from this country and paid for by the French company, comprising locomotives, steam hammers, lathes, scoops, steam dredges, buckets and small repairing machines and tools. For the most part this machinery shows better condition to-day than that brought from Europe.

The collecting of immense quantities of machinery on the isthmus, before it was actually needed, is one of the queer transactions that marked the extravagant action of the early canal company. Scarcely a thing that could be used is not to be found among their general supplies. Everything, from crockery and kitchen utensils up to locomotives and steam dredges, is there. These supplies are piled in miscellaneous profusion at Colon or Emperador, or along the line of the canal. There are nearly 2500 buildings of all kinds, including machine shops and Some of these latter are in fine condition, and they could be immediately turned into good use. In the harbor of Colon there are scores of steam dredges and craft of all sizes and kinds. Steel and iron dredging scoops and buckets are piled up on the shore in endless numbers, covering many acres of land. Cars and car wheels are marshaled in orderly array along miles of Equipment of all kinds is thus rotting away. Probably when the United States takes possession of the canal some allowance will be made for such machines as are of any value. A few of the steam dredges wil! possess slight value, and they can be converted into something of secondary use. The same may be true of some of the machines in the shops that have been partly protected. The steam hammers and lathes that were to be used for repairing the machinery can, with a little attention, be made useful in some degree. Most of these are out of date, and could not do all the work required of them. They would have to be replaced by new American machinery of to-day. The smaller boats in the harbor could likewise be converted into craft of some special use, and their machinery, if not too far gone, will be patched up to do service for a few years.

From \$5,000,000 to \$10,000,000 worth of new machinery would certainly have to be purchased to replace the junk now on the isthmus. This would include locomotives, steam dredges, machine tools, conveying apparatus, steel dump cars, wheels, rails, &c. Owing to the trying climate of the isthmus it is possible that sectional iron houses will be purchased in considerable number for the use of the workmen and officers. Orders for probably \$50,000 worth of these houses alone will be placed in this country within a year, if the canal is constructed by the United States. The building of the locks and harbor terminals will require the highest of modern engineering skill, and the present advanced state of the profession will call for articles never anticipated by the The steam and electrical maoriginal canal company. chinery required for constructing these locks and terminals will be quite an item in the expenditures. the canal is finished by engineers from this country it will be done in the most approved manner, and this means the utilization of machinery of the most advanced Altogether the work will give some stimulus to type. many lines of industry in this country.

The Pittsburgh Valve & Fittings Company announce the removal of their offices from the plant at Barberton, Ohio, to the Frick Building, Pittsburgh, Pa.

#### Harnessing the Sun.

BY GEORGE E. WALSH.

The effort to compel the sun to perform mechanical work has, within the past few years, met with singular success in the arid regions of the West, where fuel of all kinds is scarce and high priced. The part that oil has played in developing Southern California by furnishing a cheap fuel for electrical and steam power plants is well known, but no less effective has been the utilization of the mountain streams for long distance electrical transmission all along the Pacific Coast. While oil and water power have revolutionized industrial conditions on the Pacific Coast, experiments in harnessing both the wind and sun have been carried on with considerable promise of success. The wind mills are not only used for pumping water directly for irrigation purposes, but they have been coupled to electric generators for supply-ing farms with cheap power for operating small machinery and for illuminating buildings. The effort to harness the sun's rays to do mechanical work in the arid regions of the Southwest and in Lower California is even more successful than using wind mills for driving electric generators. This part of the country has long been kept from proper development through the lack of adequate fuel, and it is doubtful if it ever could reach a high point of prosperity without solar motors. It is true that the cheapness of petroleum and the invention and perfection of oil machines have enabled parts of the arid regions to develop within the past few years; but there is a limit even to this work. The oil must be transported a considerable distance, and its cost increases with each 100 miles, so that in parts of Arizona, for instance, it is not much cheaper as a fuel than coal.

Within the past few years no invention has given such an impetus to the development of the arid lands as the successful operation of the solar motor. are vast regions in Utah, Colorado and surrounding States and Territories which depend upon the same conditions as Lower California for their development. solar motor is being introduced in these sections to operate mine machinery and pumps that are located far away from the railroads and all natural fuel. The skies are almost cloudless in these regions the year round, and the sun's rays are so warm that the machinery can be put in operation within an hour after sunrise. The size of the solar motors now in use averages from 5 to 10 horse-power, and experiments have shown that it is unwise to attempt to build larger ones. By constructing them in groups, however, the same results are obtained, and in several plants a series of two or three are being constructed to produce in the aggregate from 20 to 40 horse-power.

The solar motor used is the outcome of years of experiments. In Europe many efforts were made to utilize the sun's heat to melt different kinds of metal, and such success attended these efforts a quarter of a century ago that in France iron could be melted within 16 seconds by mirrors only 4 feet in diameter. In England, some 20 years ago, a reflector, 3 feet in diameter, was built that fused granite in one minute and melted a small cube of cast iron in three seconds. The enormous possibilities of such heat rays, when concentrated upon a small surface, were taken up by practical scientists, who sought to build working plants with mirrors in place of furnaces burning coal. Sir William Herschel made the first practical attempt in Africa, where the sun's rays were considered strong enough to give the best results. The results of this experiment were satisfactory, and Sir William Herschel published an account of his work in England, predicting that the sun could be made to do all the work required in Africa if proper machines were constructed. In spite of this reliable scientist's predictions, nothing was done to take advantage of conditions that seemed to promise great fortunes to those who succeeded in harnessing the sun for industrial purposes.

In this country, Captain Ericsson was the first to make a solar motor. It did not prove an entire success, but his work paved the way for later efforts. Within the next five years different attempts were made without success. Ericsson's plan of a machine was tried again, and the same failure happened as to the original in 1884. Another attempt, made at Longwood, Cal., added further discouragement to the pioneers in the industry. The first which attained any degree of success was the solar motor erected in Denver five years ago, and which produced nearly 5 horse-power with considerable ease.

#### Successful Solar Motor at Los Angeles.

It was this effort which led to further enthusiastic experiments until one of the large solar motors was constructed at Los Angeles two years ago. This motor has become the model for nearly all the others now springing up. It is not a perfected motor yet, but it has attained a degree of perfection which enables the owners to secure good work with it. Its cost also is so reasonable that it is not likely to limit its use to particular lines. For individual farms of 10 to 100 acres it is eminently suited, either for pumping purposes or for generating electricity for lighting and power. For mines and general pumping stations it is equally well adapted.

The huge disk of glass which serves as the heat reflector of the sun's rays looks like a huge inverted lamp. It is 33 feet in diameter at the top and 13 feet at the bottom. The inside of this huge disk is made of glass, but not in large plates. There are 1788 pieces of glass, all arranged at such angles that the sun's rays will be directly focused upon the boiler. The arrangement of these individual pieces of glass is ingenious, and much of the success of the experiment is due to this. Each glass is practically a small mirror, which follows the sun and reflects the rays at one central point throughout the day. This central point is the boiler, which is suspended in the air midway of the reflector. It is mounted on solid steel braces, and is 131/2 feet in length, with a total capacity of 100 gallons of water and 8 cubic feet of steam. The motor, which is used for pumping water, is of light but strong make, and mounted on delicate but powerful spindles.

The construction of such a solar motor is somewhat complicated. It offers a wide area of wind surface, which, during heavy gales, makes it a target that seems apparently unable to withstand the pressure. But it has been built strong enough to resist a hurricane of nearly 100 miles an hour. The reflector must be arranged so that it will at all times face the sun in order to take full advantage of its rays. The heavy reflector and machinery weigh many tons, but they are easily moved, and the engineer can do this without the slightest difficulty. The reflector is built on the plan of a modern telescope, having an equatorial mounting, with the axis running north and south. A clock arrangement regulates its movements, and all through the day it automatically follows the sun, so that at all hours it directly faces it. in this way the full rays of the sun are focused upon the boiler, which makes the water boil within a few minutes after being placed in position. Within an hour after sunrise steam is up, and continues until within half an hour before sunset. The engineer in charge can tell when there is a true focus of the sun's rays by an indicator. Then the clock work machinery is set in motion, and the motor will take care of itself for the rest of the day, generating steam by means of the power of the sun.

From the suspended boiler the steam is conducted to the engine below through flexible bronze tubes. After being used it passes into the condenser and back again to the boiler, thus automatically feeding it. Everything about the motor is automatic, even to the oiling, and it is made to run all day without the intervention of man. It acts in this respect as automatically and independently as a wind mill. The boiler can be brought to such a heat within an hour after the sun's rays are directed upon it that the steam registers 150 pounds pressure in the steam gauge. So powerful is this heat that copper has been melted within a few minutes after being place across the focal point. This motor is capable of preducing from 10 to 15 horse-power, and lifts 1400 gallonof water every minute. Its use is extending, so that it will not be many years before most of the irrigation plants will be operated by this method. No modern invention for producing power in the arid region has given half the satisfaction and promise for the future of these solar motors.

## Steel Castings.\*

BY L. L. KNOX, PITTSBURGH.

The first authentic record of steel used commercially in the United States, in the form of a cast steel article, was in 1867, when the Wm. Butcher Steel Company, who are now the Midvale Steel Company, cast a frog for the Philadelphia & Reading Railroad, at Philadelphia. Since then its growth has been fully abreast with the gigantic strides made in all lines of iron and steel development in the United States or in the world. A study of the conditions of to-day warrants the assertion that the field of usefulness and development for the steel casting is just being opened and utilized.

		Tons.
In	1901 there were produced in the United States acid	
	open hearth steel castings	206,681
In	1901 there were produced in the United States basic	
	open hearth steel castings	94,941
In	1902 there were produced in the United States acid	
	open hearth steel castings	255,475
In	1902 there were produced in the United States basic	
	open hearth steel castings	112,404

Steel castings not only have a field inimitably their own, but are usurping the former prerogative of iron castings. In structural material construction, for instance, bridges, blast furnaces, mills, large buildings, &c., the engineer is specifying steel castings almost entirely. Maritime construction turns out a vessel composed entirely of steel plates and castings. The desideratum of all construction is to obtain the maximum of strength with the minimum of material, and for such service this is more nearly approached with steel than any other known or used substance.

Open hearth steel is produced by two processes, namely, the acid and the basic, and the latter gives castings equally as good as acid open hearth steel. Castings can and are being produced of as shapely form, perfect homogeneity, possessing identical chemical composition and filling all requirements, as is possible to produce by the acid process and at a far less cost.

A résumé and condensation of the two processes would be as follows: The furnace is, in each instance, practically the same, the difference being in the lining of hearth of furnace. The acid process eliminates manganese, silicon and carbon only, the phosphorus and sulphur being practically unchanged from the intitial charge. basic process eliminates all the ingredients above specified, except silicon, which is very deleterious to this proc-But silicon is a subject for the blast furnace treatment, and can there be kept low. Therefore it follows that the basic open hearth practice is a metallurgical stride forward. Leaving entirely the domain of theory, it is an established fact that steel is now being produced of such chemical and physical structure that no chemical or physical determination will demonstrate by which process it was made, whether it is a product of an acid or basic open hearth furnace. This, then, completely obviates the pertinency of the question by which process was the steel produced.

In a regenerative or open hearth furnace, the charge is exposed to the direct action of the reducing flame, and, when melted, the carbon is also eliminated; to the resultant bath manganese is added, and it is recarbonized, thus producing steel. To obtain the requisite heat, regeneration is practiced, and for this purpose oil and natural gas are used, but the general practice is with producer gas and air, the air and gas being preheated. The construction of all open hearth furnaces is similar, but no one form would be suitable in every instance, as locations and conditions give variations.

The regenerators play a specific part, and that is to preheat the ingoing gases and air; to accomplish this end the chambers or regenerators must contain 60 to 100 cubic feet per ton of steel; as practiced in many instances 30

to 40 cubic feet capacity is installed, which is completely inadequate.

The form or shape of the regenerator is just as important a factor as the superficial area, because heated air or gas is expanded and has a buoyancy or tendency to ascend; and the two regenerators may contain identical internal area, yet the one which is built with a less basal area and greater altitude is far more efficient than the one built with a greater basal area and less altitude.

The valves regulate and control the passage of the air and gases, representing the prime requisites for proper and economic open hearth practice. In many instances the valves employed are of the common butterfly type, which become warped with heat, thereby failing to seat or forming a gas seal when closed. The gas thus escaping to the chimney, without performing any work, is a direct fuel charge per ton of product. A perfect valve does not exist, but there are valves which approach the requirements-in not warping, being water cooled and always seating, being gas sealed when seated, simple in construction, easily accessible and quickly reversible. The writer has given this subject much thought, and there are several valves which meet many of the requirements.

The term ports is used to indicate the openings into the furnace, through which pass the incoming preheated gases and air, and, at the same time, by the shape and location of said ports direction is given to said gases and air. The waste products of combustion pass off through the ports. To fulfill the mission for which they are constructed, the ports should be sufficiently long and properly located to give the desired direction or control of the entering gases and air. In many instances the ports are simply holes in the wall, without length or location, and the entering volume of gas and air has no predetermined direction or course, liable to strike and destroy the side walls or roof instead of the surface of the charge. The uptakes are conduits for carrying the gas and air from the regenerators to the ports and vice versa. The main feature is to have ample internal area.

The slag pockets are receptacles to receive any slag issuing from the ports, and should be located at the base of the uptakes, independent and away from the regenerators; whereas, in general practice, these pockets are located in the checker work in steel foundry practice. The regenerators should be located directly in the rear of the uptakes and slag pockets, away from and independent of the furnace itself.

The open hearth furnace proper requires a compact, rigid and solid foundation. As generally practiced by steel foundries, this elementary engineering feature is turned upside down, by setting the hearth on top of the regenerators, which is equivalent to placing the hearth on a foundation subject to great variations in temperature, causing equal variations in contraction and expansion. The hearth, besides resting on a solid foundation, should have about nine square feet per ton of steel produced, and the shape should be such as to facilitate the most perfect combustion possible of the gases and air.

A well constructed furnace should contain charging doors and doors on the tapping side, which are used to repair the bottom, also to examine the workings of the These doors should be water cooled, thereby prolonging the life of the furnace lining and hearth, and assisting the usefulness of the furnace operators. general steel foundry practice, doors are installed only on the charging side and are not water cooled. It would be hard to design a poorer furnace than is in general use in the steel foundries of to-day, which is caused partly ignorance and partly by the necessity of submitting plans for the cheapest first cost furnace in which steel can be made.

James Stillman, John W. Gates, Henry Budge and r. H. Ray have been named as the subcommittee of the Executive Committee of the United States Realty & Construction Company, New York, to formulate a plan for the reorganization of the company's finances. A plan supported by those in control of the corporation provides for an issue of 41/2 per cent. bonds to the extent of \$18,000,000, to be exchanged for the outstanding preferred. stock, and \$14,000,000 new stock to be partly exchanged for the preferred and partly for the common stock. It

<sup>\*</sup> A paper read before the Pittsburgh Foundrymen's Associa-

is said that the company will be fully able to meet the interest on the bond issue. The George A. Fuller Company are a subsidiary interest of this corporation.

#### The Caskey Hydro-Pneumatic Punch.

After about two years of experimental use and sale of the Caskey pneumatic punch, during which time such improvements as were found desirable have been made, the makers are now placing the tool upon the market for general sale. The machine is believed to be adaptable to the varying requirements of a wide field of usefulness, offering itself as an economical appliance in general punching operations where it is desirable to carry the tool to the work rather than to take the work to the stationary tool. The punch is, of course, made in various forms, including both horizontal and vertical combinations of air cylinder and punch ram, to meet the requirements of the various classes of service. In Fig. 1 is shown a common form, wherein the actuating cylinder is horizontal and the

through the tube E and the passage J directly to the punch ram, compressing the helical spring and bringing the punch F into action. The diameter of the punch ram is such that its area is several times greater than that of the tail rod E, thus multiplying the effective value of the intensified pressure actuating the ram. The volume of the interior of the tail rod is so proportioned that the full stroke of the piston causes a depression of the punch ram just sufficient to accomplish the work required of it. Thus, when the work is pierced motion of the punch stops, so that jarring and undue strain of the parts is prevented and a steady, yet positive, action is obtained.

It will be noted that the two ends of the cylinder may be placed in communication when the sleeve valve H is in the position shown. The hole through the horizontal pipe joining the vertical posts leading upward from the cylinder ends is not continuous, but communication between them may be had by way of the two port holes in the pipe and the passage in the valve H when in the position shown. Rotation of valve H from the position shown cuts off the communication between the two ends of the

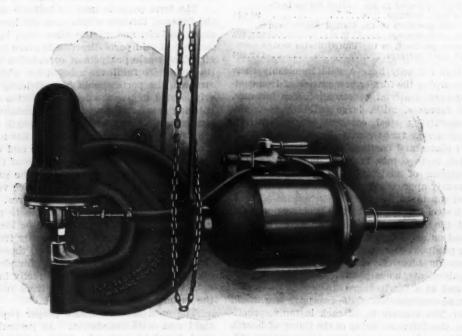


Fig. 1.—One Form of the Punch with Auxiliary Stroke.

THE CASKEY HYDRO-PNEUMATIC PUNCH.

punch operates vertically. The machine shown in Fig. 1 has an auxiliary stroke attachment, connecting the controlling valve with the ram chamber by rubber hose and pipe, as shown.

The construction and operation of the punch in its various forms may be understood by reference to Fig. 2. Here A is the horizontal air cylinder, with hemispherical ends to correspond to the form of the spherical piston B working within it. At C is the point of attachment for the air supply hose. The ball piston carries a tail rod, D, working within a shell or sleeve attached to the rear end of the cylinder A. Both the tail rod and the piston itself are hollow and are filled with oil. Entering the ball piston through a stuffing box at the forward end is a tube, E, whose outside diameter fits the bore of the tail rod and whose interior is in direct communication with the top of the punch plunger cylinder G, the connection being made in this pattern of punch by means of the passage J cored within the punch frame, as clearly shown in Fig. 1. As the piston advances from its rearward position, shown in Fig. 2, under the influence of the air pressure, the point of the tube E enters the tail rod of the piston, at once sealing all communication between the tail rod and the interior of the piston proper. The total air pressure upon the exterior of the piston is then intensified by being exerted entirely upon the column of oil in the tail rod. This intensified pressure is transmitted

horizontal pipe, and, therefore, between the two ends of the cylinder. With the communication open between the two ends of the cylinder, as shown in Fig. 2, the air pressure is equalized on both sides of the piston, and the latter is forced to the rearward position by the combined actions of the helical spring under the punch ram and of the difference in sectional area between the tube E and the tail rod D. Rotation of the valve H to cut off communication between the two ends of the cylinder opens the forward end to the atmosphere, and thus allows the full air pressure at the rearward end to force the piston forward for the working stroke. The return of the piston to rearward position by allowing the pressure to equalize on the two ends of the cylinder is held to effect a considerable saving in air consumption, since the same air utilized in the working stroke is effective in returning the piston after the hole is punched. In the machine shown in Fig. 1 the controlling valve is of the plug cock type, instead of the sleeve type of Fig. 2. The general principle of operation, however, is the same in both machines.

Owing to the peculiar construction and arrangement of the ball piston and its co-acting parts, no air can have access to the high pressure passages unless the oil level within the piston is permitted to descend below the top of the tail rod opening. It is claimed that by this feature the annoyance and inconvenience sometimes incident to the use of certain other hydro-pneumatic tools is eliminated. If the oil level should fall so far as to allow the entrance of air to the tail rod when the piston advances, a replenishment of the oil supply may be made at once and the difficulty removed.

The Caskey punch is made regularly in five sizes, and a sixth size is in course of preparation. Special forms are made to suit peculiar requirements of various classes of work. The small No. 1 size weighs complete only 33 pounds, yet it is said to exert 14,000 pounds of pressure at the punch with 80 pounds per square inch air pressure. It is designed to punch 11-16-inch holes in 1/8-inch plate, or correspondingly larger holes in lighter plates. From this small punch for light sheet metals the size is increased to No. 5 in the present line, which size is stated to weigh 720 pounds, to exert 110,000 pounds pressure at the punch with 80 pounds air pressure, and to punch a %-inch hole in 5-16-inch plate or a 1-inch hole in %-inch plate. It is said that by increasing the air pressure to 100 pounds this larger tool will easily punch a 1-inch hole in 1-inch plate. By slight modification of their mechanism, Nos. 4 and larger may also be arranged for use as compression receivers and as shears. The Caskey

this purpose and that therefore the merchandise is not steel but iron.

The protest was sustained of Newell Brothers Mfg. Company against the assessment of duty on black taggers iron by the Surveyor of Customs, Springfield, Mass. This iron was classified as manufactures of metal, under Paragraph 193, Tariff act of 1897, with an additional duty of two-tenths of one cent per pound, under Paragraph 133, and was claimed to be dutiable under Paragraphs 131 and 133, or under Paragraph 193 alone. The protest was sustained that the merchandise is dutiable under Paragraph 193.

Henry Lund & Co. protested against the assessment of duty on bar and band iron by the San Francisco Collector. Certain so-called bar iron flats were classified under Paragraph 124, Tariff act of 1897, when not exceeding three-eighths of one inch in thickness, and under Paragraph 126, when having a greater thickness, and certain band iron was also classified under Paragraph 126. The protestants contended that the merchandise was dutiable under Paragraph 128, covering hoop, band or scroll iron. The beard held that the bar iron not less than three-eighths of one inch thick and thicker than No.

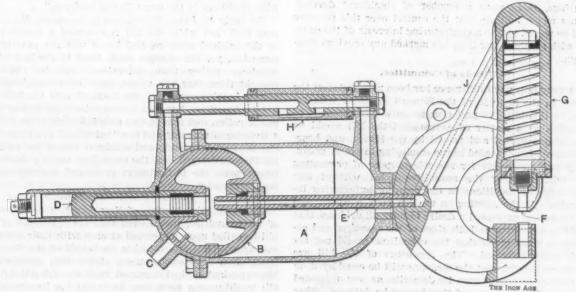


Fig. 2.—Sectional View, Showing Interior Construction.

THE CASKEY HYDRO-PNEUMATIC PUNCH.

punch is the product of the Chicago Pneumatic Tool Company, Fisher Building, Chicago, Ill.

#### Decisions on Iron and Steel Duties.

Among the decisions of the Board of General Appraisers promulgated by the Treasury Department January 28, 1904, quite a number of cases appeared referring to iron and steel. Among these are several decisions regarding claims of Thomas Meadows & Co. against the assessment of duty by the New York Collector on sheet iron and stamped steel shapes. "Common black sheet iron and stamped steel shapes. iron, valued at more than three cents per pound, was classified as manufactures of metal under Paragraph 193, Tariff act of 1897, and was claimed by the protestants to be dutiable at 1.3 cents per pound, under Paragraph 133." It was held that this latter paragraph does not include such articles, and, besides, it does not provide the rate iron, valued at more than 3 cents per pound, was overruled. Certain stamped steel shapes to be used in electrical transformers were classified as steel sheets, under Paragraphs 193 and 133, Tariff act of 1897, but are claimed to be dutiable under Paragraph 135 as stamped steel shapes. This claim is sustained under an unpublished decision of May 5, 1903, in which it is admitted that this merchandise is to be used in the electrical machines known as transformers, and it is urged on the part of the Government that only iron can be used for 10 wire gauge is dutiable at the rate of six-tenths of one cent per pound, under Paragraph 123; that the bar iron exceeding three-eighths of one inch in thickness and one inch in width is dutiable at the rate of eight-tenths of one cent per pound, under Paragraph 124, and that the band iron is dutiable at the rate of six-tenths of one cent per pound, under Paragraph 128, as claimed. The importers having made the wrong claim as to the bar iron, the protest was overruled as to that merchandise. It was sustained, however, as to the band iron.

Adelbert P. Hine, superintendent of the Coe Brass Company plant of the American Brass Company, has been made general superintendent of all the plants. George Braham, who has been assistant superintendent of the Coe Brass Company, has been made superintendent, and William E. Besse has been promoted to the position of The purchasing for all the assistant superintendent. American Brass Company's plants-viz., Coe Brass Company, Benedict & Burnham Company, Waterbury Brass Company, Ansonia Brass & Copper Company, Holmes, Booth & Haydens Company and Chicago Brass Company is now done by the American Brass Company at their Waterbury office, and not by the individual plants, as heretofore. F. L. Adams, formerly general manager of the Holmes, Booth & Haydens Company, has been made assistant purchasing agent of the American Brass Company.

## The National Eight-Hour Bill.

#### Hearing Before House Committee on Labor.

Washington, D. C., February 9, 1904.—The House Committee on Labor on the 4th inst. held the first of a series of hearings upon the bill, H. R. 4064, introduced by Representative Hitt of Illinois, and generally known as the National Eight-Hour bill. The opponents of the bill were represented by J. K. McCammon, Robert Hayden and H. A. Herbert, counsel for the iron and steel and shipbuilding interests; Marshall Cushing, secretary of the National Association of Manufacturers, New York; Daniel Davenport of Bridgeport, Conn., attorney for the Anti-boycott Association; E. F. Du Brul of the National Metal Trades Association, and Richard M. More, representing a large number of glass manufacturers. Samuel Gompers, president of the American Federation of Labor, and several members of the Legislative Committee of that organization appeared in behalf of the measure.

While the statements made at the hearing were of a preliminary character and designed only to outline the scope of the testimony to be furnished at subsequent hearings, there were a number of significant developments which indicate that the contest over this measure will be waged by the manufacturing interests of the country with greater vigor than has marked any previous campaign.

#### Attitude of Committee.

A very important difference has been manifested at the outset in the attitude of the House Committee with regard to this bill. In past Congresses it has appeared to be taken as a matter of course that the bill would be favorably reported and passed by the House, and hearings have been conceded to the employing interests grudgingly and apparently for the sole purpose of preventing the criticism that the committee acted without any knowledge of conditions in the great manufacturing industries. At the meeting on the 4th inst., however, several members expressed a desire to hear all evidence that could be presented on both sides of the question, and assurances were given that the committee would not act until fully informed. The opponents of the bill are therefore hopeful that the measure will be considered on its merits, or rather upon its demerits, as was suggested by Judge McCammon, and that it may be defeated either in committee or in the House, on the basis of a strong minority report.

Upon the convening of the committee, Chairman Gardner inquired if the friends of the bill desired to make any statement, to which Mr. Gompers replied that "in view of the fact that the committee was very largely made up of the same members that constituted it in the last Congress and in previous Congresses," he would content himself with filing the printed statements heretofore submitted unless some new feature should be adduced by the opposition, when an opportunity would be requested to submit evidence or arguments in rebuttal.

#### Judge McCammon's Statement.

Judge McCammon at once called the chairman's attention to the fact that the committee was not, as Mr. Gompers had said, substantially the same as in previous Congresses, but was composed largely of new members of the committee and new members of Congress. On account of this fact, he thought it fair to assume that the committee would desire to hear all that was necessary to enable them to understand the probable operation of the proposed law. With regard to the bill itself, it was not the same measure that was before the former committee, and it was not even substantially the same as that under consideration in the last Congress. It was true that the central idea was the same—that is, to directly compel Government contractors to adopt a hard and fast eight-hour system, and indirectly to compel all large manufacturing interests of the country to follow suit. By amendments made to the bill it had been so modified that it was now conceded to be chiefly designed to compel the shipbuilding interests and those manufacturers who supply materials for ships to adopt the eight-hour system. In

other words, in this country of equal rights, it was proposed by this bill to sustain a principle obnoxious to every theory upon which the institutions of the country are based.

The opposition of the manufacturers, Judge McCammon said, was not to a shorter workday to be brought about by natural means, but was directed against any legislative attempt to arbitrarily force important changes in industrial conditions. Throughout the contest over eight-hour legislation in Congress the companies and individuals whom he represented had disclaimed any opposition either to the theory of those who advocate an eighthour system or to the practical application of an eighthour system "where the consent of the various trades and manufacturers which produce the same or similar articles as are contracted for from time to time by the Government is practically unanimous." This consent, he said, must necessarily be practically unanimous or universal, else the advantage must be to the establishment which employed men to work ten or twelve hours in producing substantially the same product as those working shorter hours. "Our opposition is to no theory, to no principle, but is directed to this vicious attempt to place a Government contractor at a disadvantage in connection with producers in the same line of business."

In reply to Judge McCammon's statement, Mr. Gompers said that while the bill represented a modification of the original measure, and hence was not exactly the same bill, yet the changes made were in the line of restrictions rather than extensions, and he therefore thought there was less reason than before in giving extended hearings upon it. He declared that the bill was not un-American, but that it was wise, that it was good public policy, and that it was safe industrially as well as a measure of economy and one "calculated to advance the standard of citizenship and manhood among the people." He therefore urged that the committee make a favorable report upon the bill without prolonged hearings as in past Congresses.

#### Full Discussion Desired.

Representative Hughes of New Jersey, a new member of the committee, then moved that the opponents of the bill be called upon to proceed at once with their evidence and arguments. Mr. Cushing, on behalf of the National Association of Manufacturers, stated that members of his organization had assumed that the friends of the bill would occupy some time in explaining its provisions and in showing why it should receive favorable action at the hands of the committee, and therefore had deferred coming to Washington until a later date. Witnesses would be produced, however, at the next regular meeting of the committee.

Representative Goebel of Ohio remarked that he was a new member of Congress and a new member of the committee, and while he could, of course, read the records of the proceedings of former committees, yet he would prefer to hear a full discussion of both sides.

Mr. Davenport then made a brief statement on behalf of the Anti-boycott Association, which provoked a sharp retort from Mr. Gompers and a very lively exchange of personalities ensued. "I represent an organization," personalities ensued. "I represent an organization," said Mr. Davenport, "with a varied and numerous membership in different parts of the country. Over a hundred of them are in Connecticut. The membership is private, and the organization is formed for the purpose of aiding in the enforcement of the laws, particularly the laws against boycott, and our members look upon this bill as an attempt to boycott every concern in this country which is not willing to arrange its affairs according to certain requirements which they find to be impossible. the movement to perfect our organization was started, I traveled throughout the country for the purpose of interviewing employers, manufacturers and workmen, and I have visited several thousand establishments and have come into contact with their managers, and I have made it my business to go through their works and talk with the men to see whether or not they believe in any such measure as this, and I am prepared at a suitable time to lay before this committee the information which I have obtained. A greater mistake was never made in the world than to suppose that the workmen of this country

are in favor of any measure which will deprive a man who may lose a day here and there, on account of sickness or for any other reason, from making up that loss at a future time. The so-called representatives of the laboring class here are no more thoroughly representative of them than light is of darkness."

Mr. Gompers retorted with much heat that the "bona fide character of the gentleman's clients can be readily understood when he will not bring any of them here," but that the American Federation of Labor represented more than 2,000,000 organized workmen and 24,000 labor unions, whose names and addresses were published broadcast throughout the country. As to what an individual workman would say to an attorney of a private organization of employers, Mr. Gompers said, that might be left to the imagination, whereupon Representative Goebel suggested that Mr. Gompers should reserve his arguments with regard to Mr. Davenport's statement until after he had been heard.

Mr. Du Brul stated that, as the representative of the National Metal Trades Association, he desired to arrange for the hearing of a number of witnesses and would probably occupy half a day at some future time. His association was comprised of manufacturers, a great many of whom were engaged in Government work, and the pending bill affected their interests very seriously.

#### What the Bill Really Means.

Chairman Gardner then asked Judge McCammon whether it would be practicable to put into the record a statement by the opponents of the bill as to the construction to be put upon the various exemptions embodied therein, and especially those that were modified by the Senate Committee. Judge McCammon replied with considerable emphasis that the suggestion of the chairman only served to illustrate the contentions of the opponents of the bill. It was absurd to ask those who are opposed to the bill to explain it or to undertake to outline its scope. After some discussion in the committee, it was decided that Mr. Davenport and such witnesses as the National Association of Manufacturers might decide to put on the stand should be heard on the 11th inst., to be followed on the 18th inst. by Mr. Du Brul and other representatives of the National Metal Trades Association. Other appointments were left to be made at a later date, with the general understanding that probably six or eight days would be consumed in the hearing of testimony and legal arguments. W. L. C.

#### The United States Shipbuilding Settlement.

The complicated affairs of the bankrupt United States Shipbuilding Company are at last getting untangled. On the 4th inst. concessions were made by Charles M. Schwab and his associates, which will at least end the litigation that has been in progress for seven months, and may bring about a successful reorganization. The Sheldon Reorganization Committee is to be reconstructed and will consist of George R. Sheldon, Charles S. Fairchild, John E. Borne, Pliny Fisk, Max Nathan and Charles W. Wetmore. This new committee, with Receiver James Smith, Jr., will select a new Board of Directors, subject to the approval of Thomas F. Ryan of the Morton Trust Company, for the managers of the syndicate underwriting new bonds to be issued. All the floating indebtedness of the United States Shipbuilding Company fastened to the constituent properties through the method of their acquisition by the combination, is to be paid as incidental to the reorganization. The alleged fraudulent bonds, given to venders of constituent properties on the formation of the United States Shipbuilding Company, are to be left for determination as to their validity in the courts when the first mortgage comes to be foreclosed under the reorganization plan.

The new reorganization plan leaves the bondholders in the shipbuilding company free to accept or fight, as they may feel inclined. There are several bondholders' interests not specifically included in the agreement reached. One of these interests is that of the Commonwealth Trust Company, successors to the Trust Company of the Republic, who have \$1,000,000 of the first-mortgage bonds deposited under the old Sheldon plan, and

claim \$500,000 more. Another is the collective interest of rural New York investors in the shipbuilding company securities, of whom Governor Odell is one, to the extent of \$180,000 cash. Others are individuals in New York who purchased at 75 per cent, of 90, the original price, the bonds taken up by the Sheldon Syndicate from the security pledged on the various trust company loans, which bonds have been selling all the way from 12 to 20 during the progress of the litigation. These last, together with the trust company, have been depositories with the Sheldon Committee under the old plan of reorganization, their holdings being turned over to the committee by the Sheldon Syndicate, which controlled them until January 29 last. There is still another interest to be reckoned with in the reorganization, the strength of which is problematical at the present time, and to be gauged only from statements made as to intentions. That is the small stock interest in the old company which stands for an actual payment of money on the part of the holders. As all the old stock is to be wiped out, these holders may bring suit to establish their rights. Suits are possible also by the bondholders who do not accede to the plan. They would come through the intervention of such bondholders in the actions to foreclose the two mortgages on the shipbuilding properties, or possibly in collateral actions of a civil or criminal nature against individuals concerned in the original flotation. It will be seen, therefore, that the rocks have not all been removed from the channel, although the outlook is much brighter for smooth sailing.

The new plan contemplates the organization of a new corporation, which is to be called, for the present purpose at least, the Bethlehem Steel & Shipbuilding Company. is to be capitalized at \$30,000,000, the stock divided into \$15,000,000 common and \$15,000,000 noncumulative 7 per cent. preferred, with an issue of \$3,000,000 collateral trust sinking fund 6 per cent. ten-year gold bonds, put out for the purpose of furnishing working capital. Mr. Schwab is to receive \$9,000,000 in preferred stock and \$6,000,000 in common stock, and the first-mortgage bondholders the remaining stock. The committee has entered into an agreement with the Morton Trust Company and Thomas F. Ryan, as syndicate managers, dated January 27, 1904, which agreement provides for the purchase and sale of the entire issue of the new bonds at 871/2 per cent., or, in the aggregate, \$2,625,000, so as to guarantee the cash requirements for consummating the plan and working capital without compulsory assessment on the bondholders.

On the new bonds the subscription scheme is to be as follows: To assenting holders of existing 20-year 5 per cent. collateral and mortgage bonds (known as Bethlehem collateral bonds) the option to subscribe for \$1,500,000 at 87½ per cent. of their par value for \$150 in new bonds in respect of each \$1,000 existing collateral and mortgage bond, and to participate pro rata in the profits under the selling agreement. To assenting holders of existing first-mortgage sinking fund gold bonds the option to subscribe for \$1,500,000 at 87½ per cent. of their par value for \$100 in such new bonds in respect of each \$1,000 of existing first-mortgage sinking fund gold bonds, and to participate pro rata in the profits under the selling agreement.

Accor panying the plan there was issued a statement of the committee to the effect that all expenses of the litigation here and elsewhere and of the reorganization would be paid by the depositing bondholders to the extent of 1 per cent. of the par value of bonds deposited. The committee states that it controls the Bethlehem or Schwab bonds and a large proportion of the first-mortgage bonds.

The annual fixed charges of the new company will only be \$897,550, which consist of \$517,550 interest on underlying bonds of the Bethlehem Iron Company and the Bethlehem Steel Company, and \$380,000 interest and sinking fund on the new ten-year bonds.

The fire brick stoves for the two new furnace plants under construction by the Lorain Steel Company, at Lorain, Ohio, will be lined with the type of checker brick patented by Frank C. Roberts. The stoves for the two original furnaces of this company were also lined with this form of checker brick.

#### Notes from Great Britain.

London, January 30, 1904.—The ascertainment of the Midland Iron and Steel Wages Board for November and December, announced last Thursday, shows the average net selling price to have been £6 14s. 3.79d. The total production, omitting odd quantities, was 25,849 tons. This is a decrease of 5507 tons, while the general average shows a decline of 1 shilling 2 pence on the preceding two months. The decline of the average was not sufficient to cause any alteration in wages.

The ebullience everybody expected has not yet made its appearance. Works are not fully occupied, but are running fairly steadily. Buyers are still buying cautiously, particularly in the unmarked bar branch. Black sheet makers are not in such a good position as a month ago, and galvanizers are fighting hard against a relentless fall in prices. In this connection inland galvanizers find it very difficult to meet the competition of the coast firms. Pig manufacturers would seem to be in curiously uneven positions. With some makers quotations are not strong, but, on the other hand, extensive buying is proceeding quietly in some directions.

On the northeast coast a second 5 per cent. reduction in wages having been secured, and steel plates and other material having come down to very low values, shipbuilders, in order to keep their yards employed, have been quoting greatly reduced prices, with the result that these have tempted a number of speculative orders. Alike on the Tyne, the Wear and the Tees, such orders have been secured, or, what amounts to the same thing, boats now on the stocks, which were built speculatively, have been sold. Foreign buyers, too, are now coming into the market, and further orders are anticipated. It would be unwise, of course, to make too much of this movement, for shipping is still in a state of acute depression, and there is nothing in the freight markets to warrant the building of more tonnage, unless it is the probability of war in the Far East, from which ship owners would be the first to profit.

With regard to the reduction demanded by the Northeast Coast Engineering Employers' Federation, of 2 shillings on wages over 30 shillings, 1 shilling 6 pence above 25 shillings, 1 shilling below 25 shillings, and 5 per cent. on piece prices, there are signs that the demand will be strongly resisted. The districts which have so far held meetings on the subject have been unanimous in their decision to resist any reduction whatever. They say that the percentage of unemployed is very much less than last year at this time, and they also urge that, as compared with the wages paid in other less skilled trades, they are underpaid.

#### The Present Output of Pig Iron.

It is computed that at present we are only making pig iron at the rate of 7,500,000 tons a year, which is 2,000,000 tons under the ascertained output of 1900. This will, however, shortly be changed, for many plants are making additions or renewals which will greatly increase the rate of output. At Consett, Bolckow, Vaughan & Co.'s South Bank Works, Dowlais, Barrow, and other works. new furnaces are being built, which will both be of much larger capacity and more economical than the rank and file of the British iron works of to-day. Most of these furnaces will be at work within the next few months. Speaking generally, it is expected to reduce the cost of labor alone by 1 shilling 6 pence to 2 shillings per ton, and the average output per week is expected to be raised from \$50 to 1500 tons.

#### The Competition in Steel Forgings.

The chairman of Palmers Shipbuilding & Iron Company recently told his shareholders that they were able to buy steel forgings 30 per cent. cheaper in Germany than at home. As Palmers Company are said to be able to produce everything required in the production of steel ships, this is a significant remark.

#### The Chamberlain Tariff Commission,

The Tariff Commission has divided itself into special committees, two of which are of interest to the metal trades. The iron and steel committee is composed of

Col. Charles Allen, Sir Alfred Hickman, Arthur Keen and Sir W. T. Lewis, while in the engineering, machinery and shipbuilding section are Francis Elgar, George Flett, W. Harrison, H. D. Marshall, A. W. Maconochie, Sir Andrew Noble and Hon. Charles Parsons.

#### Profits and Dividends.

Henry Bessemer & Co., Limited, report a net profit for the year of £12,511, and recommend a dividend of 7½ per cent. on the ordinary shares. They also recommend writing off the amount standing to the debit of "improvements and additions" account, and further to transfer £500 to the workmen's compensation fund.

Tubes, Limited, have made a profit of £7501, as compared with a trading loss of over £26,000 for the previous year. Arthur Chamberlain, brother of Joseph Chamberlain, is chairman of this company, and at the annual meeting had one or two observations to make which are of interest. He pointed out that their material was steel, and the whole of that steel came from abroad. The English steel makers, without exception, had refused even to quote, and the company had given up asking them. If they were to have a duty of 10 per cent. on the steel billets which they bought, it would, with the waste, amount altogether to about 30 shillings a ton on every ton of finished tubes that they sold. The increased price of food would reduce the efficiency of their workmen, who needed to be in "good fettle" for the kind of labor they had to perform, and if their efficiency were reduced the company would have to reduce their wages. Moreover, they did not do a penny of business with the colonies, and, therefore, protection would be most disastrous from their point of view; in fact, he believed it would be the last straw that would break the camel's

#### The Philadelphia Foundrymen's Association.

The one hundred and thirty-fifth regular meeting of the Philadelphia Foundrymen's Association was held on February 3 at the Manufacturers' Club in that city. The attendance was large, including visitors from Massachusetts, Ohio, Virginia, Missouri and Tennessee.

The regular business of the association was transacted as usual. The committee on the foundry exhibit at the World's Fair, St. Louis, reported that subscriptions had been more freely received since the last meeting of the association. A meeting of the general committee, together with Dr. Holmes of the World's Fair, had been held and total contributions are now reported to aggregate \$7500, with \$2500 additional in sight. Of the former amount \$1965 was contributed through the Philadelphia association. The Fairbanks Company, 701 Arch street, Philadelphia, H. L. Tripple, representative, was unanimously elected a member of the association.

The paper of the evening, "Recent Investigations and Discoveries in Cast Iron," by A. E. Outerbridge, Jr., followed. The paper was illustrated by lantern slides. At its conclusion a vote of thanks was tendered the author.

The "Quiz Class" took up the question, "Does it take longer to melt hard, white iron for malleable purposes than it does soft, gray iron in a cupola lined to the same diameter?" but little information was brought out. Considerable discussion followed the question, "What relative advantages have exhaust and nonexhaust tumbling barrels for different classes of castings?" It was said that exhaust barrels will, in general, do the work faster, cleaner and more satisfactorily than the ordinary type of barrel. For work to be polished, plated or requiring a highly painted finish, exhaust barrels gave by far the better results, as well as a saving in time—varying from ¼ to 2½ hours, according to the class of work. Water polishing for nickel plated work was said to give even better results.

The last stage of tearing down the Ferris wheel, which has held a conspicuous place in Chicago's sky line since the days of the World's Fair, was reached the last week in January. Immediately afterward it was started on its way over the Chicago, Burlington & Quincy Railroad to the St. Louis Exposition, where the wheel will be

built up anew for the third time in its history. The transportation of the iron and steel work required 120 flat cars. Two cars were needed to sustain the weight of the great steel axle, which weighs 76 tons.

#### A New Vacuum System for Pneumatic Transmission.

The salient feature of the system illustrated is that the line is normally a sealed partial vacuum, air being admitted only when the cartridge or carrier is in transit, instead of flowing continuously, as in the older systems; in other words, power is used only when the apparatus is actually in use. The system is based upon the Dinspel-Stoetzel patents and is designed not only for cash carrier service in stores, but also on a more elaborate scale for the transmission of mail, freight and express matter underground. The engraving in Fig. 1 shows a typical station of a store system. At the left, upon the cabinet, are shown variations of terminal appliances. At the right is the complete apparatus as installed for service with pipes overhead. Beneath the table is shown a cylinder, within which is contained the ram, acting as a timing device. For each station this ram is so adjusted as to close the line immediately after the cartridge has reached its destination. The operation of the system is briefly as follows:

The air pumps connected with the system operate to exhaust the air from the pipes, which, as already indicated, are nominally sealed at both delivery and receiving ends against the entrance of exterior air. The pumps are controlled by governors set to stop their operation when the desired degree of vacuum is reached. The lower end of the ram cylinder is in pipe connection with the sending tube, so that normally the underside of the ram is in communication with the partial vacuum of the system, while the upper side of the ram bears atmospheric pressure. Under these conditions the ram remains at the bottom of its cylinder. The insertion of a cartridge into the end of the sending tube depresses a trigger, which reverses the condition of affairs at the ram cylinder, admitting air underneath the ram and placing the upper end of the cylinder in connection with the vacuum system. Under these conditions the ram rises and, by means of its rod connection, mechanically opens a valve at the switch or crossover, about 8 feet above the table. The opening of this valve places the lower portion of the tube in connection with the vacuum system, so that the atmospheric pressure back of the cartridge forces it upward past the valve and thence through the system to its destination. As soon as the cartridge has passed the valve normal conditions at the ram cylinder are gradually restored so that the ram descends to its lower position. This return of the ram is so timed by the relative diameters of inlet and outlet pipes that its descent will allow the valve in the pipe above to close when the cartridge has been transmitted to its destination.

The diaphragm governor controlling the action of the air pump is arranged to start and stop the latter only as the conditions throughout the system require. When a cartridge is inserted into the sending tube a flood of air is let in, filling the pipe behind the cartridge and driving the carrier through the pipe. This breaking of the vacuum in the tube system, with which the upper side of the diaphragm is in communication, results in depression of the diaphragm by the tension of a helical spring, automatically starting the pump into operation. As the air in the system is again gradually rarefied, including the governor space above the diaphragm, atmospheric pressure at the vents below the diaphragm again overcomes the tension of the spring constantly exerting its force to draw the diaphragm downward, restores the diaphragm to its upper position and stops the nump.

In ordinary store service the system is worked on the basis of a rarefaction of about 1¼ pounds per square inch below atmospheric pressure, commonly spoken of as "1½ pounds vacuum." By strengthening the spring of the governor diaphragm and increasing the pumping capacity this rarefaction may be increased to any reasonable desired amount. The diaphragm governor, while designed

particularly for use in the present connection, may be used as well for controlling the operation of steam engines, gas engines or electric motors, or for shifting belts.

#### Long Distance Underground Service.

For long distance underground systems the same principles as those for store service are involved, but for the sake of economical operation transmission lines are divided up into relay sections of from 1 to 3 miles in length. In an elaborate system, sending and receiving tubes of various diameters may be grouped together, the smaller tubes for mail, telegrams, &c.; the larger ones for freight and express matter up to, perhaps, 500 pounds per carrier. Beneath this transmission tube system must be placed a large pipe of a sectional area equivalent to the sum of the sectional areas of the service tubes. This large pipe is connected with the pumps at the power house and, at intervals of from 1 to 3¼ miles—according to the diameters of the tubes and speed of

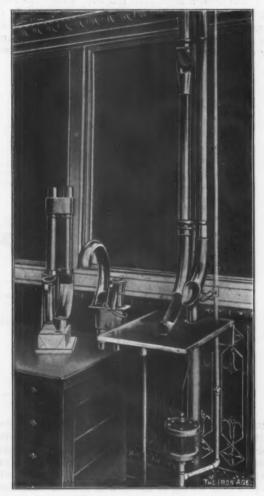


Fig. 1.-Store Service Apparatus.

A NEW SYSTEM OF PNEUMATIC TRANSMISSION.

transmission desired—is connected with each of the service tubes.

Fig. 2 shows the essentials of a complete system of this type, including one relay station. For longer systems the section marked "relay device" would be repeated alternately with long sections of transmission tube. The essentials of the system, then, are the transmission device and the terminal device, connected by transmission tubes of suitable lengths, each leading to a relay device. At the right hand of Fig. 2 is the receiver trough, having a hinged cover which may be lifted to admit the carrier. The end of the trough and cover are perforated with holes to admit the exterior air for starting the carrier when the gate valve between the receiver trough and the transmission tube is opened. The operator, having inserted the carrier and closed the receiver trough, throws downward the starting lever above, after which the action of

the system for transmission and delivery of the carrier is entirely automatic.

The conditions before depression of the starting lever are as follows: The three-way cocks to right and to left of the ram chamber above the gate valve are in the position shown, such that atmospheric pressure from the right is admitted to the top of the ram chamber, while the lower portion of the cylinder is in connection with the vacuum system by means of the pipe shown leading off toward the left. These three-way cocks are so connected as to operate simultaneously to reverse the connections, admitting atmosphere below and opening the top to connection with the vacuum. When the operator depresses the starting lever he reverses the connections, as stated, so that the ram, which ordinarily is down, is forced upward, opening the gate valve. The connecting rod joining the three-way cocks is extended toward the left to connect with one arm of a bell crank lever whose other arm is thrown downward when the starting lever is depressed. When thus thrown downward this arm breaks the toggle joint, which has meantime held the check valve in the transmission tube closed against the admission of air. With the toggle joint broken the check valve is immediately opened by the carrier, impelled by the air entering more air is prevented and the closing of the check valve at the relay device cuts this first section of the system out of service, so that the air pump may proceed to rarefy the interior to place it again in normal condition.

the interior to place it again in normal condition.

Considering now the relay device, we find that at the right hand end is the suction connection between the transmission tube and the vacuum pipe below. This suction pipe forms the only connection between the transmission tube and the vacuum pipe for the first section of the system. Through this suction and into the vacuum pipe has passed the air within the first section, so as to maintain the partial vacuum in front of the carrier as it is driven through the tube by the atmospheric pressure behind. As the carrier passes this suction connection the check valve immediately above it is opened and then at once falls, so that when the air valve and the toggle check valve at the transmission end have closed the air pumps will restore the partial vacuum in this The relay device is practically a repetition of the apparatus connected with the left hand ram at the transmission end and performs essentially the same operations, passing the carrier on to the terminal device or to the next relay section, as the case may be. By a similar timing feature the ram of the relay device closes the air

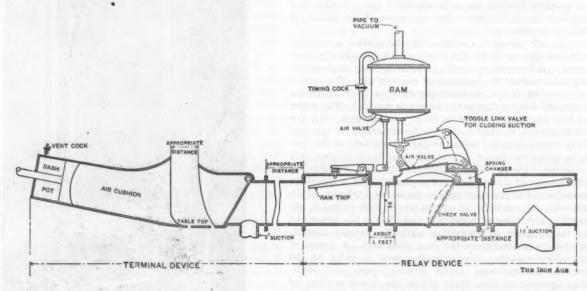


Fig. 2.—Transmission Tube and Operating Appliances

THE DINSPEL-STOETZEL VACUUM SYSTEM

through the perforations in the end of the receiver trough. When the gate valve reaches an open position a lug upon its stem strikes the air valve lever above, opening the air valve at the bottom of the left hang ram chamber. As indicated, this ram chamber is connected by a pipe from its top to the vacuum system. Admission of air below the ram therefore acts to drive the lattento the top of the chamber. The rise of the ram opens the air valve in the transmission line so that the entrance of atmospheric pressure may drive the carrier through the tube to the relay device.

After the carrier has been thus started upon its way, the operation of course being practically instantaneous, the attendant raises the starting lever to its normal position, as shown in the engraving. The atmospheric pressure thus admitted above the ram forces it downward, closing the gate valve and releasing the air valve lever. The air valve then closes automatically and prevents the entrance of more air underneath the left hand ram. Connecting the top and bottom of this ram chamber is a pipe, in which is a timing cock, so adjusted that the establishment of equilibrium above and below the ram by the passage of air from below will be accomplished as soon as the carrier has reached the relay at the end of the first section of the transmission line. When this equilibrium is established the ram descends by its own weight and by the suction produced by the rush of air by the valve below. When this valve is seated the entrance of admission valve when, or soon after, the carrier has reached the terminal device or the next relay.

The terminal device requires little description. The carrier strikes and opens a check valve, which closes immediately after its passage, sealing the transmission tube against further entrance of outer air. The terminal device includes at its extreme end an air cushion chamber fitted also with a dash plunger, the space behind which is in communication with the outer air by means of a vent cock, which may be set as required. The carrier, brought to rest in the air cushion chamber, will slide back, or may be drawn back for removal upward through the opening above the table top, this opening being made of a suitable length to allow passage of the largest carrier used.

It will be seen, therefore, that at the transmission end and at each of the relay points air for driving the carrier is admitted only for a sufficient length of time to carry the cartridge through one section and into the next. Thus is eliminated the necessity, common in other systems, for pushing a continuous column of air through a long mileage of tubes. It is stated by the designers of this new system that in any of the old ones it has not been found practicable thus far to economically convey matter continuously a greater distance than about 2 or 3 miles, owing to the tremendous frictional resistance of a column of air of that length. In consequence, it is held that under the best of conditions the

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dispatch of mail matter by means of any of the pressure systems is attended with greater expense than would be involved in sending by wagon or other method, the pneumatic transmission being used in spite of this great expense only because of its greater speed. The promoters of the Dinspel-Stoetzel vacuum system state that it is possible to send a carrier weighing as much as 500 pounds through a tube 16 inches in diameter, at the rate of about 2 miles per minute, with a vacuum of only 6 inches of mercury, and that it would be entirely practicable to send matter from New York to Chicago by this system, timing devices being placed at intervals of from 2 to 3 miles and relay pumping stations being located at points of economic advantage at longer intervals along the line.

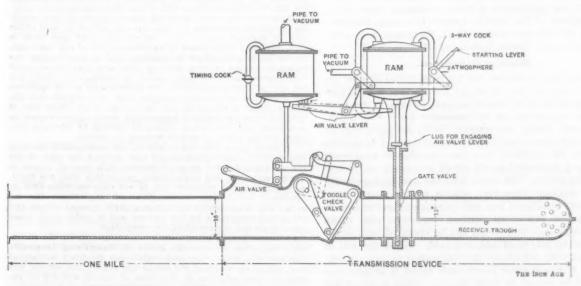
It is of interest to note that the city of St. Louis has granted a franchise for the installation of this system between the Union Station in the center of the city and the Transportation Building on the grounds of the Louisiana Purchase Exposition—a distance of 41/2 miles. In this installation a series of large and small service lines for sending and receiving express and mail matter will be served by a vacuum pipe of corresponding size. It is proposed to carry freight and express packages

#### Milwaukee By-Product Coke.

The Milwaukee Coke & Gas Company, Milwaukee, Wis., are just completing by-product coke ovens of the Semet-Solvay type, in the southern part of that city, and have now before the City Council an ordinance permitting them to pipe certain streets in order to convey their gas to large manufacturing plants. They hope to secure the passage of this ordinance, notwithstanding opposition on the part of the local gas company, and to find a sale for their gas for fuel purposes to such plants as the Allis-Chalmers Company and others in their neighborhood. They have opened a selling office at 800 Fisher Building. Chicago, in charge of Martin Otis as manager.

Their first battery, comprising 80 ovens, is nearing completion. They expect to make deliveries commencing February 20. It is the purpose of the Chicago branch of this company to have local storage bins and yard room in Chicago, so that in addition to their carload business they may be prepared to make team deliveries of coke to foundries having no track facilities.

As illustrating the growing tendency of firms requiring large amounts of space to leave the congested district



for Relay System of Long Distance Carriage.

#### OF PNEUMATIC TRANSMISSION.

from the city to the fair grounds at a speed of at least a mile per minute. This enterprise is not in connection with the United States Government, but will be devoted to the transmission of miscellaneous freight backward and forward between the fair grounds and the city. distance will be divided into relay sections of suitable It is estimated that the installation will cost somewhat more than \$100,000, and the company agree by the terms of their franchise to give the city of St. Louis 5 per cent. of the gross receipts.

The introduction of the system in this country is being made by the Universal Pneumatic Transmission Company, of which Joseph J. Stoetzel, one of the patentees of the system, is president. Other officers are: F. J. Rugly, vice-president; G. E. Burns, second vice-president; A. J. Williams, secretary; Siegfried Melohn, treasurer. Meysenburg & Peebles, Boston, are fiscal agents. general offices are at 231 Canal street, Chicago.

English newspapers state that the Barrow Hematite Steel Company and Cammell, Laird & Co. have secured an order for the Grand Trunk Railway for 15,000 tons of steel rails, and 12,000 tons for the Canadian Pacific Railway. The price is reported to be £4 12s. 6d. per ton, net, f.o.b. This is equivalent to about \$22, to which must be added the ocean freight to Canada. Somebody has fooled our English contemporaries on the price.

within the "loop" at Chicago, the Coca-Cola Company, a Georgia corporation, are having a 14-story structure erected at 1322-1328 Wabash avenue. It is expected that the building will be completed and ready for tenants about April 1, 1904. The construction of the building is unusually substantial, provision being made for such tenants as may desire to carry heavy machinery and stock. A large power plant will be installed in the basement of the building, furnishing electrical power and light.

By oversight we neglected to state in the title to the illustration of the sand lime brick plant in our issue of January 28 that we were indebted to H. de Joannis of Chicago, associate editor of Brick, for the photograph from which the cut was made. The photograph was taken by Mr. de Joannis personally, in the plant of the Colonial Brick Company at Kokomo, Ind.

The cotton market was panicky during the past week, each day from Wednesday showing a much lower price with enormous transactions. On Saturday July cotton sold down to a shade below 14 cents. Large operators unloaded their holdings at the best price they could get. The prophecy of 20-cent cotten, so freely heard a few days since, is now termed "an iridescent dream." The highest price reached had been 18 cents at New Orleans.

#### The Power Boat Bill.

#### House Committee Gives Hearing to Manufacturers.

WASHINGTON, D. C., February 9, 1904.-The House Committee on the Merchant Marine and Fisheries on the 4th inst. gave a hearing to a number of manufacturers of gasoline and other small engines, and builders of launches propelled by such motors, on the bill, H. R. 7033. recently introduced by Representative Grosvenor of Ohio, requiring power boats under 15 tons used for the carriage of passengers or freight, or for hire, to conform to the navigation laws relating to inspection, &c., and to carry licensed pilots and engineers. This bill has been pending in Congress for several years, and at the last session was favorably reported with an amendment providing that the same person might act as engineer and pilot. The measure is opposed by the manufacturers on the ground that it places wholly unnecessary restrictions upon the operation of such boats and increases the cost of maintaining them to a prohibitory point. Among those who addressed the committee were E. F. Du Brul of the National Metal Trades Association, Cincinnati; John J. Amory of the Gas Engine & Power Company, New York; H. R. Sutphen of the Electric Launch Company, Bayonne, N. J.; J. M. Schoonmaker of C. H. Sterlinger & Co., Detroit, Mich., and James Audenried, Buffalo, N. Y.

#### Basis of Opposition.

Mr. Du Brul said that the National Metal Trades Association opposed the bill on the ground that the requirement that such small vessels should conform to the same laws and regulations as big passenger boats was unreasonable and wholly unnecessary. With his knowledge of the methods now employed by the steamboat inspection service he felt confident that the inspection of such boats would be a farce and would afford absolutely no protection to the public. The small launches now equipped with gasoline engines were very simple affairs, easily managed by any intelligent boy, and to require them to submit to inspection and carry licensed engineers and pilots would mean that they could not be operated, and hence could not be manufactured and sold. While the bill in question would not affect launches owned by private parties, yet it would cover every such vessel if at any time it should be rented to other parties. Such a bill would bear with special hardship upon many fishermen and longshoremen who have abandoned the use of sail boats and have invested their little capital in gasoline launches, which they use on the lakes and rivers in putting out and taking up their nets, in carrying freight up and down shallow rivers where larger boats cannot go, and in making short trips with pleasure parties. While only a small proportion of these launches are maintained solely for hire, nine-tenths of them are hired occasionally, and it would therefore be necessary for each owner to make a long trip every year and pass an inspection and examination in order to secure a license for himself and boat.

Chairman Grosvenor of the committee insisted that the passage of the bill was necessary to prevent accidents, but Mr. Du Brul replied that the danger of accidents in small gasoline boats was no greater than in a sail boat and probably not so great. Such accidents as had occurred in small power boats resulted from leakage or from some other reason which would not be removed or checked by an annual inspection or by a license to the operator, who, of course, could not be required to pass so rigid an examination as would be necessary for an

applicant for a steam engineer's license.

Mr. Audenried stated that his company had manufactured gasoline engines for 17 or 18 years, and in that time had put out for marine purposes about 4000 engines, 75 per cent. of which have gone into boats of the class against which this bill is directed. The bulk of these boats, he said, were used by boatmen to go up creeks and little bays to gather truck from farmers and carry it to market. His firm always gave close attention to the question of the competency of parties buying these boats to operate them, because if they were not handled properly the business of building boats and engines would

be seriously injured. A member of the committee suggested that the inspection and certificate required by the pending bill would be of great benefit to manufacturers, to which Mr. Audenried replied that, having the interest of their own business at heart, his firm thought they were competent to inspect their own boats and engines. Manufacturers who were not sufficiently solicitous for the public welfare to build and equip their boats properly would not stay in business very long.

#### The Supervising Inspector-General Favors the Bill.

Chairman Grosvenor at this point read to the committee a letter from Supervising Inspector-General Uhler urging the passage of the bill, as follows:

I do not believe that the bill is far reaching enough, and should include a provision that "all vessels propelled by gas. fluid, naphtha, alco-vapor, electricity or other like motors shall be, and are hereby, made subject to all the provisions of Section 4426, Revised Statutes of the United States, and to such rules as the Board of Supervising Inspectors shall by their regulations deem applicable and practical for their safe payigation." The deem applicable and practical for their safe navigation." The increasing number of disasters occasioned by accidents to and collisions with and between this type of vessels makes it imcollisions with and between this type of vessels makes it imperative that something should be done by Congress to restrict their indiscriminate use and navigation, for under present conditions of their operation they are simply a menace to life and property and will continue so until the arm of the law provides for the protection of those who are at their mercy.

Vessels of this type, excepting those of above 15 tons, carrying freight or passengers for hire, are not obliged to have either willot or environment the moly restriction placed upon them is

ing freight or passengers for hire, are not obliged to have either pilot or engineer, and the only restriction placed upon them is that they shall be governed by certain sections of the law relating to lights and signals for passing, &c. It may be that the person in charge is color blind or deaf, and that the so-called "automatic, absolutely safe" motor is looking after itself, but not only are the persons on board their vessels at the mercy of the man who can neither hear the blast of a whistle nor discern a signal if displayed, but the license of an officer who is passing it at the mercy of some person whose signals cannot be

cern a signal if displayed, but the license of an officer who is qualified is at the mercy of some person whose signals cannot be understood and who knows absolutely nothing of the rules provided for the safety of vessels meeting or passing.

Without going into the details of the contemptible methods employed by some owners to get just without the pale of the law, it might be well to say here that this class of vessels is waging an unfair and unreasonable competition with the legitimate steam vessel interests that is not only annoying and inconsistent but is also discouraging and unprofitable for the owner who is obliged by the law to provide licensed officers and life saving appliances for his steamer and is under many other restrictions not demanded of his competitor.

I believe that if these vessels are brought under the steamboat inspection service, the Board of Supervising Inspectors can and will make rules and regulations for their navigation that will at once protect the public and satisfy the owners, and that the rules applying to this class of vessels will not be unnecessarily harsh, oppressive or discriminating.

Safer Than Steam Vessels.

#### Safer Than Steam

Mr. Amory stated that the Gas Engine & Power Company, whom he represented, were builders of gasoline and steam launches and had also built torpedo and gun boats for the Government. He said he was personally familiar with the boiler proposition, which was the dangerous feature of steam vessels. His company had built about 5000 small gasoline boats during the past 20 years, but he did not know of a single accident or of the loss of a single life caused by an explosion or by any mishap connected with the machinery. He thought there were about 25,000 of these boats in use to-day, and Congress should be very careful in legislating not to impose a hardship on a very large class of deserving persons. The great mass of owners of these boats, he said, were men who had put all their moderate means into them and were thoroughly familiar with the business or they would not have put their money into it. For a number of years, Mr. Amory said, his company kept a record of mishaps of all kinds on different types of boats, but the percentage of accidents on the gasoline boats was so ridiculously small as compared with those on steam craft that that class was dropped from the records entirely.

Mr. Sutphen spoke as follows in behalf of the electric launch industry, which, he said, was comparatively new in this country:

We have been building electric launches for 12 years. The first boats of that kind that we built, in 1893, were used at the Chicago Exposition, at which time 55 launches were in service. chicago Exposition, at which time 55 launches were in service, and during the exposition over 1,000,000 passengers were carried without a single accident of any kind. These boats were operated the greater part of the time by college students, who during the summer months, wishing to make a little on the side, undertook that work. At the Buffalo Exposition two years ago over 600,000 passengers were carried without a single accident. These boats were also operated by young men. There is not on ecord a fatal accident or accident of any kind from the opera-

tion of electric launches.

tion of electric launches.

The equipment of these boats consists of a storage battery, which is charged on shore, and the operation of the boat is very simple—just as simple, in fact, as turning on an electric light, and just as safe. There is absolutely no danger from shock or fire or explosion or from any cause that this bill is trying to regulate. Our boat has been adopted by the United States Navy and War Departments and is carried on battle ships and cruisers and is used at the navy yards. Our boats have superseded steam launches in many places in recent years. They are far safer than sail boats, and any man who can steer can run them in safety. Absolutely no skill is required so far as the motor is concerned, and many launches have been sold to ladies and opersafety. Absolutely no skill is required so far as the motor is concerned, and many launches have been sold to ladies and operated by them. There is a special element of safety in these launches in the fact that the power equipment is invariably below the water line and the boat cannot capsize. I would say, however, that we also build gasoline boats, and we keep careful account of mishaps of all kinds, and to our knowledge there has never been an accident of any kind on our boats.

#### Means of Saving Life.

Mr. Schoonmaker said his firm were manufacturers of gasoline engines and had equipped many launches for use on the Detroit and St. Clair Rivers, where 500 or 600 have been running continuously for the last six or seven years without an accident. On the other hand, many of them have been the means of saving life on other craft. His company, he said, have been selling gasoline engines for stationary power for the past 15 years, and have replaced several hundred steam engines by gasoline engines because the liability to explosion was not so great.

Upon the conclusion of the hearing the committee decided to hold another session at a later date to hear the advocates of the proposed legislation. W. L. C.

#### The Chicago Automobile Show.

CHICAGO, ILL., February 8, 1904.—The fourth automobile show held under the auspices of the National Association of Automobile Manufacturers opened at the Coliseum, Chicago, Saturday, February 6. Covering, as they do, 69,000 feet of the 70,005 feet of floor space in the Coliseum proper and its annex, the exhibits are said to be far more extensive, and the display superior to the recent exposition held at Madison Square Garden, New York City. The attendance on the opening (Saturday) night, too, which was estimated at 10,000, if continued throughout the week's exhibit, promises to establish a precedent in the annals of automobile shows. Altogether, over 250 exhibits have been placed, representing an aggregate value of more than \$2,000,000. Of this number of exhibits, about 180 are displays by automobile makers, while the remaining 70 or 75 are manufacturers of accessories and supplies. The latter occupy space in the A distinctive feature of the exposition is the fact that it is essentially American, less than a half dozen types of automobiles of foreign manufacture being exhibited. The foreign cars shown are the Darracq, Benz, Panhard, Mors and Mercedes. The machines on exhibition range in size from mammoth traffic trucks and heavy touring cars to the electric runabout and motor bicycles. They come in a variegated array of colors from scarlet and Nile green to white, and represent prices of from \$500 to \$10,000.

The show at the Coliseum has its educational value as well as attractiveness to the sightseer in illustrating the extraordinary progress which has been made in automobile construction in late years, and especially the strides which have been taken toward betterment by American makers. With native ingenuity and assimilation of foreign ideas, the American manufacturer has produced a 1904 model machine which will hold its place in the foremost ranks of automobile perfection. This is particularly true of the "limousine" type of car, which is inclosed in glass, offering the comforts of a cozy home Another improvement in one of Chicago's blizzards. which has been made in the late models is the arrangement of the operating mechanism to permit of the easy repairing of cars, the machinery being placed in front and under a hood instead of under the car. Attention has also been given to the sliding gear transmission. A device has been provided which disconnects the gear of the countershaft entirely when running at high speed, insuring absolute quiet and freedom from vibration. New features have also been developed in the brake attachment and steering apparatus.

Aside from the spectacular, scientific and social features of the exhibition, the prospects for business are unprecedented, according to men who are interested from that point of view. Representatives of the trade are present from Mexico, South America, Cuba and Porto Rico, as well as from all parts of the United States, and will make new details as well as complete business left over from the New York show. A large delegation is here from St. Louis for the purpose of securing omnibuses and party cars for use during the World's Fair. Many local men also are interested in cars for heavy traffic. The impetus given trade by the New York exhibition is expected to be repeated after the Chicago display, and it is feared that the output for the year will be exhausted before the show is over.

The gallery space of the Coliseum is devoted to supplies. There are collected all of the essentials to a wellregulated automobile outfit-lamps, guards, plate glass, swinging seats and a hundred other things, including various styles of dress. The Coliseum is most effectively and artistically arranged, the electric lights and decorations making the picture impressive.

Among the notable displays might be mentioned the following:

Winton Company, Cleveland, Ohio.
Electric Vehicle Company, Hartford, Conn.
Pope Motor Car Company. Toledo, Ohio.
Peerless Motor Car Company, Cleveland, Ohio. Peerless Motor Car Company, Cleveland, Onio.
Locomobile Company, Bridgeport, Conn.
Woods Motor Vehicle Company, Chicago.
Studebaker Bros. Mfg. Company, South Bend, Ind.
Pope Mfg. Company, Hartford, Conn.
Olds Motor Works, Detroit, Mich.
Thos. B. Jeffery Company, Chicago.
Ralph Temple, Chicago.
American Darracq Automobile Company, New York.
Mead Cycle Company, Chicago. Mead Cycle Company, Chicago.

The following is a list of the exhibitors who occupied the main floor:

American Roller Bearing Company, Boston, Mass. Autocar Company, Ardmore, Pa. Apperson Bros. Automobile Company, Kokomo, Ind. Apperson Bros. Automobile Company, Kokomo, Ind.
American Darracq Automobile Company, New York
American Electrical Novelty Company, Chicago.
Austin Automobile Company, Grand Rapids, Mich.
Auburn Automobile Company, Auburn, Ind.
Berg Automobile Company, Cleveland, Ohio.
Burtt Mfg. Company, Kalamazoo, Mich.
Bartholomew Company, Peoria, Ill.
Brest & Hatcher, Cleveland, Ohio.
Badger Rass Mfg. Company, Koncehe, Wis Brown-Sipe Gear Company, Kenosha, Wis, Brown-Sipe Gear Company, Syracuse, N. Y. Baldwin Chain & Mfg. Company, Columbus, Ohio. Brown, W. H., Chicago.
Cleveland-Canton Spring Company, Canton, Ohio. Cadlilac Automobile Company, Detroit, Mich.
Crest Mfg Company, Cambridge, Mass.
Chicago Motor Vehicle Company, Chicago.
Coey, C. A. & Co., Buffalo, N. Y.
Columbus Motor Vehicle Company, Columbus, Ohio. Chelsea Automobile Company, Chelsea, Mich.
Chicago Motocycle Company, Chicago.
Dawson, J. H., Machinery Company, Chicago.
Duryea Power Company, Reading. Pa.
Eisenhuth Horseless Vehicle Company, Middletown, Conn. Electric Vehicle Company, Hartford, Conn.
Elmore Mfg. Company, Clyde, Ohio.
Ford Motor Company, Detroit, Mich.
Fredonia Mfg. Company, Youngstown, Ohio.
Franklin, H. H., Mfg. Company, Syracuse, N. Y. Haynes-Apperson Company, Kokomo, Ind.
Holley Motor Company, Bradford, Pa.
Hammer-Sommer Automobile Carriage Company, Detroit, Mich.
Holson Motor Patents Company, Grand Rapids, Mich.
Hagmann & Hammerly, Chicago.
Jeffery, Thos. B. & Co., Kenosha, Wis. Jeffery, Thos. B. & Co., Kenosha, Wis.
Jones-Corbin Automobile Company, Philadelphia, Pa.
Jackson Automobile Company, Jackson, Mich.
Knox Automobile Company, Springfield, Mass.
Kirk Mfg. Company, Toledo, Ohio.
Locomobile Company of America, Bridgeport, Conn.
Mitchell Motor Works, Racine, Wis.
Marble-Swift Automobile Company, Chicago.
Mead Cycle Company, Chicago.
Model Gas Engine Company, Auburn, Ind.
Marr Auto Car Company, Detroit, Mich.
Northern Mfg. Company, Detroit, Mich.
National Motor Vehicle Company, Indianapolis, Ind.
National Sewing Machine Company, Belvidere, Ill.
Olds Motor Works, Detroit, Mich.

Olds Motor Works, Detroit, Mich.
Plerce, George N., Company, Buffalo, N. Y.
Peterson & Draper, Chicago.
Packard Motor Car Company, Detroit, Mich.

Peerless Motor Car Company, Cleveland, Ohio.
Premier Motor Mfg. Company, Indianapolis, Ind.
Pope Motor Car Company, New York City.
Regas Automobile Company, Rochester, N. Y.
Reid Mfg. Company, Detroit, Mich.
Reliance Auto Company, Detroit, Mich.
Royal Motor Car Company, Cleveland, Ohio.
Rodgers & Co., Columbus, Ohio.
Rothschild & Co., Chicago.
Standard Wheel Company, Terre Haute, Ind.
Studebaker Bros. Mfg. Company, South Bend, Ind.
St. Louis Motor Carriage Company, St. Louis, Mo.
Stearns, B. F., Company, Cleveland, Ohio.
Sandusky Automobile Company, Petroit, Mich.
Synnestredt Vehicle Company, Pittsburgh, Pa.
Sullivan, Roger J., & Co., Detroit, Mich.
Stevens, J., Arms & Tool Company, Chicago.
Thomas, E. R., Motor Company, Buffalo, N. Y.
Tincher, T. L., Chicago.
Union Auto Company, Union City, Ind.
Winton Motor Carriage Company, Cleveland, Ohio.
Woods Motor Vehicle Company, Cleveland, Ohio.
Woods Motor Vehicle Company, Cleveland, Ohio.
Waterloo Gas Engine Company, Waterloo, Iowa.
Waitham Mfg. Company, Waltham, Mass.
The following manufacturers of automobile sum

The following manufacturers of automobile supplies were allotted space in the gallery:

American Coil Company, W. Somerville, Mass.

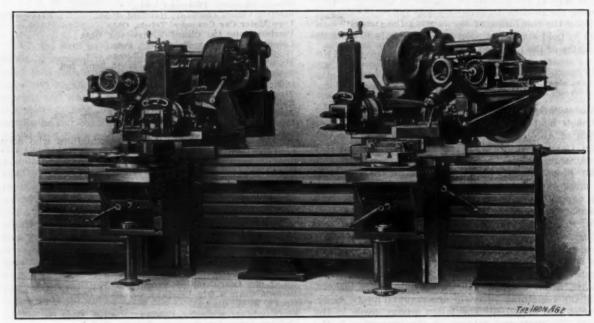
Autocar Equipment Company, Chicago.

American Ball Bearing Company, Cleveland, Ohio.

Manhattan Storage Company, New York City.
Motsinger Device Mfg. Company, Pendleton, Ind.
Miller-Knoblock Electric Company, South Bend, Ind.
McCord & Co., Chicago.
Northwestern Storage Battery Company, Chicago.
National Carton Company, Cleveland, Ohio.
Pontiac Body Company, Pontiac, Mich.
Rockaway Auto Company, Rockaway, N. J.
Rose Mfg. Company, Philadelphia, Pa.
Richmond Mfg. Company, Richmond, Ind.
Remy Electric Company, Anderson, Ind.
Steel Ball Company, Chicago.
Splitdorf, C. F., New York City.
Shelby Steel Tube Company, Pittsburgh, Pa.
Standard Oil Company, Cleveland, Ohio.
Standard Carriage Lamp Company, Chicago.
Timken Roller Bearing Axle Company, Canton, Ohio.
Tennant Auto Tire Company, Springfield, Ohio.
Union Auto Company, Union City, Ind.
Varley Duplex Magnet Company, Providence, R. I.
Veeder Mfg. Company, Hartford, Conn.
Western Motor Company, Logansport, Ind.
Whalebone Rubber Company, New York City.
Wagner Cycle Company, St. Paul, Minn.
Warner Gear Company, Muncie, Ind.
Whiteley Steel Company, Muncie, Ind.

#### Double Head Swiveling Saddle Traverse Shaper.

A unique feature of this machine is the provision for turning its saddles about a vertical axis, to allow hori-



DOUBLE HEAD SWIVELING SADDLE TRAVERSE SHAPER.

American Electrical Novelty Company, Chicago.
Beecher, Chas. H., St. Louis, Mo.
Barton Boiler Company, Chicago.
Brennan Motor Company, Syracuse, N. Y.
Bowser, S. F., & Co., Fort Wayne, Ind.
Briscoe Mfg. Company, Detroit, Mich.
B-O. K. Tire Company, Chicago.
Byrne, Kingston & Co., Kokomo, Ind.
Continental Caoutchouc Company, New York City.
Columbus Brass Company, Chicago.
Chicago Rawhide Company, Chicago.
Chicago Rawhide Company, Chicago.
Dyke A. L., Automobile Supply Company, St. Louis, Mo.
Dasey, P. J., Company, Chicago.
Dayton Electrical Mfg. Company, Dayton, Ohio.
Dietz, R. E., Company, New York City.
Dennwell & Co., New York City.
Detroit Motor Works. Detroit, Mich.
Dasey, P. J., Milwaukee, Wis.
Electric Contract Company, New York City.
Firestone Tire & Rubber Company, Akron, Ohio.
Funke, A. H., New York City
Gray & Davis, Amesbury, Mass.
Hendee Mfg. Company, Springfield, Mass.
Hussey Drop Forging & Mfg. Company. Cleveland, Ohio.
Hyatt Roller Bearing Company, Harrison, N. J.
Hine-Watt Mfg. Company, New Brunswick, N. J.
Kaestner, Chas., Mfg. Company, Chicago.
Lang Mfg. Company, Chicago.
Morgan & Wright, Chicago.
Moto Car Supply Company, Chicago.

zontal cutting at any angle with the edge of the work; otherwise it is very similar to the regular traverse shaper built by the Cincinnati Shaper Company of Cincinnati, Ohio. The tool is especially arranged for machining simultaneously the two ends of a beam or other long piece. In this respect it is equivalent to two machines, and saves not only half the time of actual cutting, but that which would be lost in reversing and resetting the work on a single head shaper. The bed is 24 inches wide by 14 feet long, and as each saddle is traversed by a separate longitudinal feed screw, both may be used close together near either end or any part of the bed. Each saddle, with all the mechanism which it supports, is an independent self contained unit, individually driven by electric motor. The motor and its controller are mounted upon cast iron brackets bolted to the head, with the handle of the latter extended so that, whatever position the head may occupy, it is under instant command of the operator.

In this case the motors are 5 horse-power Crocker-Wheeler F type machines, supplied on a four-wire multiple voltage system to give variable speed. Consequently, no cone pulleys or mechanical speed changing devices are necessary, and the drive is communicated directly and positively through spur gearing.

The rotary feed is operated by hand through a worm and worm wheel, turning the head upon its swivel to any

desired position. The down feed of the cutting head, which may be vertical or at any angle, and the longitudinal saddle feed are operated by power as well as by hand. For the cutting a slow lengthwise movement is used, and for quickly moving into position preparatory to setting up a rapid traverse may be employed. When approximately in position the saddles are finally adjusted by hand, through the longitudinal feed screws by means of crank wrenches applied on the projecting spindles shown at the end. The feed screws for the heads and the traverse of the saddles have graduated collars, reading to 0.001 inch.

The top and front faces of the bed are planed and accurately squared with one another, and by means of the numerous T-slots on the vertical face work may be conveniently and quickly set up directly upon them when it is desirable. The saddles and rams have ample bearing surfaces, adjustable for wear by taper gibs, and are designed with the same rigid construction that characterizes the whole machine. The Whitworth quick return motion is used to reciprocate the rams, and for adjusting the length of stroke and the position over the work rack and pinion movements are provided. The total weight of the outfit, including its electrical equipment, is 27,500 pounds.

### The Naval Appropriation Bill. Liberal Programme for Increase of Navy.

WASHINGTON, D. C., February 9, 1904.—The annual Appropriation bill has been completed by the House Committe on Naval Affairs, and will be reported to the House before the end of the present week. The programme for the increase of the navy, as agreed upon by the committee, represents the views of Admiral Dewey rather than the Board of Construction, the admiral recommending a smaller number of ships, but of heavier tonnage, than suggested by the board. Provision is also made for an armor plate factory, which the Secretary of the Navy is authorized to build at a cost of \$4,000,000, if, in his opinion, armor cannot be obtained from private bidders at a reasonable price. The naval programme in detail, as authorized by the bill, is as follows:

One first-class battle ship, carrying the heaviest armor and most powerful armament for a vessel of its class, upon a trial displacement of not more than 16,000 tons, to have a speed of not less than 18 knots and great radius of action, and to cost. exclusive of armor and armament, \$4,400,000; two first-class armored cruisers of not more than 16,000 tons trial displacement, carrying the heaviest armor and most powerful armament for a vessel of their class, to have a speed of 32 knots and for a vessel of their class, to have a speed of 22 knots, and to cost, exclusive of armor and armament, not exceeding \$4,400,000 each; three scout cruisers of not more than 4000 tons trial diseach; three scout cruisers of not more than 4000 tons trial displacement, carrying the most powerful ordnance of vessels of their class, to have the highest speed compatible with good cruising qualities and great radius of action, and to cost, exclusive of armament, not exceeding \$1,800,000 each; and two colliers, to be capable of accompanying the battle fleet, to carry 5000 tons of cargo coal, loaded, and to have a trial speed of not less than 16 knots, to cost not exceeding \$1,250,000 each.

The decision of the committee to authorize the construction of heavy armored cruisers of 16,000 tons capacity has aroused great interest in the Navy Department, as no cruisers of this tonnage have ever been built by the United States and the project is, therefore, more or less experimental. Two of the three scout ships appropriated for will be equipped with turbine installations, the details of which have heretofore been described in these columns.

#### Secretary Moody's Views.

The extended hearings given to officials of the Navy Department as the basis of the provisions of the Appropriation bill closed with an elaborate statement by Secretary Moody, embracing some interesting observations upon the Department's relations toward the armor plate manufacturers and the efforts that have been made from time to time to cut down the price of armor under threat that the Government would establish a plant of its own capable of providing armor for all the ships that Congress might authorize. He said there was at one time a legal limitation on the price, but Congress having found it impracticable to procure armor at the price fixed, a final adjustment was made by authorizing the Secretary of the Navy, in the event that he could not procure armor at "a reasonable price," to construct an armor plant at a cost of \$4,000,000. Representative Roberts inquired whether, in view of the last contract let for armor, it would be a reasonable proposition to set a limit on the price in the pending Appropriation bill, to which the Secretary replied that he was not disposed to recommend a limit without further consideration of the subject. He added that the Midvale Steel Company had been given a contract at \$398 per ton for all the armor plate it was believed to be possible for them to make within the required time limit, although up to the time of letting the contract they had never made a ton of armor. When asked whether a recent improvement had been made in the art of producing armor that superseded the Krupp process, the Secretary said he had not heard of anything of the kind. When asked the direct question as to whether the present prices of armor plate are satisfactory, the Secretary replied:

#### Armor Situation Satisfactory.

"We are getting armor plate cheaper than any coun-The plate is satisfactory in quality, and the deliveries have now commenced to be satisfactory in point of time. The situation, it seems to me, is a satisfactory one. Of course, we must remember that with such an article as this, where there is only one customer and only two concerns up to the present time have ever produced any armor, and another one now entering into the business, those people are going to make large profits, and they ought to make large profits."

A member of the committee called attention to Admiral O'Neil's testimony, stating that the inference to be drawn therefrom was that there was an understanding between the Carnegie and Bethlehem companies as to the price at which they would furnish armor to the Government, and asked the Secretary whether he agreed with that view, to which Mr. Moody replied promptly: "It is as plain as the sun in the sky that there is an under-standing." "Then it has been certainly within the power of the combination to dictate terms to the Government?" was asked. "Until Congress broke it up," replied the Secretary. "Would it not be wise to again insert a sim-Secretary. ilar provision in our bill as to the Government erecting its own armor plant in view of the fact that you have let two contracts, one at \$50 a ton less than the other?" "I want anything that will give us the benefit of a decrease in the cost of armor," was the reply.

When asked why the Department gave a contract to one firm at \$50 a ton less than the other two, Secretary Moody said:

We received the bld from the Midvale Company. The protest was made to me against accepting the bld of the Midvale Company upon the ground that they could not meet their contract; that they never had built any armor plate; that they had not the plant to do it; that they had not the control of the patents. and that they could not do it. It was also pointed out to me that they had once before bid and withdrawn their bid. I got a report from the Bureau of Ordnance upon the subject. Subse-quently I asked Admiral O'Neil to go in person and look at the Midvale plant and give me the benefit of his opinion. The Mid-Midvale plant and give me the benefit of his opinion. The Midvale people are people of financial responsibility. Admiral ONeli made a careful report to me in which he said he thought they could build a plant, of which there was some beginning in their establishment, and that they could deliver armor plate for two smaller ships, but not more. I then said their bid should be accepted to that extent, and that a provision should be put into the contract which would enable us to cancel the contract at any time when it should appear that they were not making sufficient progress in the building up of their plant and the production of armor to meet the ships as they became ready for the armor. I think every possible precaution was taken to protect the interests of the Government and to get just as much of the armor at the lower price as was possible.

#### Delays Would Prove Costly.

The Secretary was asked whether it was not reasonable "to suppose that if the bids of all contractors had been rejected and the matter returned to Congress, there might possibly have been a limitation on the price of armor that would either have forced the contractors to come to fair terms or a Government plant would have been established," to which he replied that it was quite possible, but that in the meantime the warships would be waiting for armor, and heavy penalties would have been paid to the contractors for the ships because of the Government's inability to provide armor. A member of

the committee called the Secretary's attention to the fact that as the result of the threat of Congress to build an armor plant the Government saved at least \$3,000,000 on 30,000 tons of armor, and had since been getting the benefit of the reduction thus secured, to which the Secretary assented, but added that the United States now secures its armor at a less price than any foreign Government. When asked whether the armor plate manufacturers gave rebates to foreign Governments, thereby reducing the price actually paid, Secretary Moody said the Navy Department had no such information, and added that the officials were all convinced that the armor supply for United States war ships was furnished at a less price than that paid by any other Government. reply to a question as to what the Department would do in the event that the Midvale Steel Company failed to make armor that would stand the test, Secretary Moody said that the Department would have no recourse except to allow extra compensation to the shipbuilders on account of the delay, and then to go to the Carnegie and Bethlehem companies and ask them to make the armor.

#### The Softening and Purification of Water.\*

BY J. C. W. GRETH.

The softening and purification of water has been receiving so much attention recently in scientific and engineering papers and from engineers that it seems no longer necessary to call attention to the fact that the impurities in water are of two kinds-viz., organic and inorganic-and may be either in suspension or in solution. Those in suspension have received the most attention from engineers and deal with the sanitary purification of water for use in cities, public buildings, &c. It presents, however, an entirely different problem from the softening and purification of water for boiler feed and manufacturing purposes, and the work is usually performed by sand filter beds or mechanical filters. The presence of organic matter or bacteria, either in solution or suspension, which would be detrimental to public health, would not have any injurious effect on a boiler. The inorganic matter, such as soluble lime, magnesia and iron, as well as free acids and slit or clay, does cause an unnecessary amount of labor and expense.

#### The Impurities in Water.

The usual inorganic substances in water are the following, and are grouped as to the trouble they usually cause in steam boilers: Carbonates and sulphates of lime and magnesia, silica, oxides of iron and alumina and suspended matter. All of them tend to form scale.

The following cause corrosion: Sulphuric, hydrochloric, carbonic, acetic and tannic acid. The latter two are usually due to contamination from chemical works or other processes in which these acids are either used or developed.

Iron sulphate and magnesium chloride belong in a class by themselves, as they not only form scale, but are corroding agents besides.

The carbonates, sulphates and chlorides of sodium and sometimes potassium are found, especially sodium chloride. These substances cause no particular harm, except when they are present beyond a certain amount, in which case foaming will result.

When a water which contains a part or all of these impurities is heated to 212 degrees F., and is boiled for some time, the carbonates of lime and magnesia are precipitated; but it requires a temperature of about 300 degrees F. (or steam at 70 pounds pressure) to precipitate the sulphates of lime and magnesia. The continual evaporation of the water concentrates these impurities until finally the point of saturation is reached. Then the bulk of the more soluble impurities is precipitated, together with the less soluble carbonates, sulphates and even chlorides. This deposit of scale forms wherever the water comes in contact with the hot metal. The deposit is piled up in thin layers of iron, silica, lime and magnesia, and is generally the thickest where the least amount of steam is generated. The consequences are generally serious. The carbonates of lime and magnesia are nonconductors of heat, having relative values of 0.67 and 0.76 (felt or wool being 1.00). It is claimed that the conducting power of iron for heat is about 30 times that of saturated scale.

#### The Effect of Scale.

The effect of covering the metal with this nonconducting material is:

1. The increased amount of fuel which it is necessary to use in order to raise the temperature of the water to a given point or to generate steam.

2. There is great danger of burning or overheating the boiler, by reason of the fact that the water is not in immediate contact with the shell and cannot carry off or absorb the heat from the plates. The boiler being under pressure, the overheating of the metal results in the stretching of the plate, forming a bag; or the metal may blister or crystallize, which will very much reduce its tensile strength, rendering the boiler unsafe. means that repairs are in order, even in cases where the metal does not get heated enough to bag or blister, but is sufficient to cause the metal to expand unequally, distorting it and the joints between the several parts of the boiler. This causes leaks, which, in time, become serious enough to put the boiler out of use. Even under conditions where no disastrous results follow, a great deal of labor on the part of the engineer in charge is necessary to keep the scale from accumulating. It is usually very hard and can only be removed after considerable hard work. Continual hammering and chipping are injurious to the metal, and even if the intentions of the cleaner are the best, it is impossible to reach all parts of the modern steam generator for cleaning.

The boilers are not the only part of the steam generating plant which are affected by the impurities of the water. A deposit of a part of the carbonates of lime, magnesia and iron takes place when the water reaches the exhaust steam heater. The same trouble arises in steam plants using economizers or heaters, through which the water passes after it leaves the exhaust steam heater, and before it reaches the boilers. These obtain their heat from the waste gases of the furnace, and it is very important that their surfaces should be clean and be kept so without involving a great deal of labor and expense. A deposit, too, especially from well waters, takes place in the feed pipes, valves, pumps, &c.

#### The Action of Acids.

The action of the acids is a subject which interests us considerably on account of the surrounding rivers containing more or less, either in the free state or loosely combined.

The action is, briefly, as follows: Sulphuric acid, the one most common, is either in a free state or combined with iron as the sulphate, which the heat immediately splits up into iron oxide and sulphuric acid. In the boiler, the acid attacks the iron of the boiler, forming iron sulphate, which immediately splits up into sulphuric acid and an iron salt, which, through various stages, eventually reaches the shape of ferric oxide, which is precipitated. The acid being set free, this, with more acid coming in with the water, again attacks the iron and goes through the same process again, and eventually a water which might contain only three or four grains of free acid on entering a boiler may become a strong solution and carries on its work of rapid disintegration of the iron of the boiler. These are substances the removal or neutralization of which from water forms the subject of this paper.

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#### Mechanical Devices for Purification.

Let us first consider some of the mechanical devices and methods employed, with more or less success, in the purification of water for boiler feed purposes. The carbonates of lime, magnesia and iron are soluble in waters having carbonic acid in solution. When this water is heated to a temperature of 212 degrees F. and boiled for a time the carbonic acid is driven off and the carbonates are precipitated. This fact is made use of in

<sup>\*</sup> A paper read before the Engineers' Society of Western Pennsylvania, February 2, 1904.

the ordinary exhaust steam heater, and is the reason for its being called a water purifier. These heaters are not built of sufficient size, nor is the temperature of the water really ever raised to the boiling point, nor is the water kept in the heater or at this temperature long enough to drive off all the free or loosely combined carbonic acid, or, in other words, bring about the precipitation of all the carbonates in the heater. A portion of them are removed. The following analysis, before and after going through an exhaust steam heater of a well known make, shows the extent of the removal of the carbonates:

rest the street and the	Before. After Grains per U. S. gallon	
Carbonates. { Calcium		2
Sulphates: Calcium	2.8567 2.852	-,
Chlorides. { Magnesium	1.4225 $1.418$ $1.614$	
Oxides { Iron and alumina		
Volatile and organic matter Carbonic acid in solution	1.9996 1.234	B

The sulphates of lime and magnesia are not affected in the exhaust steam heater, as they require a higher temperature to cause precipitation. About 300 degrees F., or steam at 70 pounds pressure, will bring about a precipitation. To find a remedy, or to prevent the precipitation of the sulphates in the boilers, a second tank, like a boiler filled with pans or shelves, and heated with live steam, is brought into use. Into this receptacle all the water passes before it finally reaches the boiler. By maintaining this heater at the boiler pressure the water becomes hot enough to start precipitation of its solids. This is not an instantaneous process, but a gradual one; and it continues after the water has reached the boiler.

Of course, the efficiency of mechanical purifiers depending on heat is proportional to the length of time during which the water is subjected to the heating process. In practice, the water is never thoroughly purified in exhaust or live steam purifiers, because the heater is usually so small that the water passes through it in too short a time to complete the precipitating process. Sulphate of lime is said to be insoluble at temperatures above 300 degrees. This is true, provided there is a certain amount of it in the water. Analyses of the water from the blow off valves of boilers show that the sulphate of lime in solution is as high as 25 grains per gallon, even when the temperature is far above 300 degrees. From this it is evident that it is due to concentration as well as to heat that the sulphate of lime precipitates in the boilers, forming scale. Concentration does not take place either in exhaust or live steam heaters, and even if exhaust and live steam heaters did accomplish all that is claimed for them by their makers, they are merely devices for the prevention of scale in the boilers by forming the scale in the heaters themselves, which means that, in place of cleaning simply the boilers, both heaters and boilers have to be cleaned. Neither type of heater is of value for the removal of any of the free acids; such as sulphuric, or of such substances as magnesium chloride.

Innumerable other mechanical devices have been tried to overcome this trouble, such as skimmers, surface blow off valves, &c. Notwithstanding all these contrivances, the scale continued to form on the plates and the tubes of the boilers. Another method is to supply to the heated water in the boiler a remedy which would keep the scale from hardening.

#### Boiler Compounds.

We now come to the subject of boiler compounds. Mixtures known as boiler compounds have been used for years. The chemistry of boiler compounds is correct, and the subject is thoroughly understood. They are generally composed of soda in combination with some organic acid, such as tannic or acetic acid. All of these acids are said to corrode the metal and to be positively injurious to the boiler.

Almost everything, at one time or another, has been put into the boiler to keep the scale soft, such as shavings, oak bark and tea, for the tannic acid they contain; distillery slops and vinegar, on account of the acetic acid;

potatoes and corn, for their starch; leather, slippery elm and manure, for their gelatinous matter, and molasses and sugar, because of the saccharates of lime formed. Innumerable other substances have been used without judgment or reason, as, for instance, the following, taken from the patent records: Parched ground coffee, extract of logwood, blood, meal and salt—all "thoroughly mixed with water and substantially as described, and for the purpose set forth."

From the chemical standpoint, the most efficient compounds are tri-sodium phosphate and fluoride of sodium. With these, when the water is heated, both the carbonates and sulphates of lime and magnesia are precipitated as phosphates or fluorides, which do not harden on the tubes and shell. The principal objection, however, is the cost of using them in quantities sufficient to remove enough of the scale forming matter to be of benefit. They are expensive, first, because the chemical equivalent of these compounds makes it necessary to use 1 pound of tri-sodium phosphate to precipitate 0.9 pound of carbonate of lime or 0.77 of carbonate of magnesia. pound of fluoride of sodium is required to precipitate 1.19 pounds of lime carbonates or 1.6 pounds of lime sulphates, and its cost at the present writing is about two and a half times that of tri-sodium phosphate. There is, however, not the same degree of economy obtained by the introduction of any foreign substances into the boiler which can be obtained by the use of feed water purified before entering the boilers, because coal, and, therefore, heat, are required to keep the temperature of this muddy, insoluble mass of combined mud and scale to the temperature of the water. Furthermore, this foreign matter absorbs an astonishing amount of heat. It is for this reason that sea water boils at a higher temperature than fresh water, and molasses at a higher temperature than either.

A remedy, to be of benefit, must be applied in the proper manner, at a seasonable time, and at the right place. Simply because a substance will, when put into hard water, precipitate lime and magnesia is no reason why this substance should be put into a boiler. Quite the contrary. Heat, without chemicals, causes precipitation in a boiler, and that is just the thing which is not desired. A steam boiler is a still of high efficiency and not a chemical retort.

The methods described above for the purification of water, either before entering or while in the boilers, have proved unsatisfactory and expensive, and are at best only partially successful.

#### Water Softening and Purification.

We now come to the question of water softening and purification before entering the heaters, economizers or boilers.

The chemistry of the subject is extremely simply. We will first consider the substances available for this purpose, their efficiency and economy. The following table gives the quantities of the various substances required to precipitate 1 pound of carbonate of lime and 1 pound of sulphate of lime, and the cost of so doing. These figures are based on the present market price of the chemicals.

Cent	B.
0.56 pound lime, at 1/4 cent per pound 0.1	4
2.18 pounds tri-sodium phosphate, at 4 cents per pound 8.7	12
0.8 pound caustic soda, at 3 cents per pound 2.4	
3.15 pounds barium hydrate, at 3 cents per pound 9.4	
11.92 pounds tannin extract, 27 per cent., at 2% cents per	
pound	8
2.28 pounds augar, at 5 cents per pound	101

For the removal of the sulphates and chloride, 1 pound of sulphate of lime requires for its precipitation:

the same of the sa	Cents
0.85 pound soda ash, at 1 cent per pound	0.85
1.53 pounds barium chloride, at 2 cents per pound	3.06
8.76 pounds tannin extract, 27 per cent., at 2% cen	
pound	24.09
1.68 pounds sugar, at 5 cents per pound	8.40
1.6 pounds tri-sodium phosphate, at 4 cents per pour	

An examination of the tables shows conclusively that lime and soda ash are the most efficient and decidedly the cheapest chemicals that can be used for this purpose.

On account of their low cost, the small amount required, as compared with other chemicals, and the fact that after the chemical reaction has taken place no deleterious substances are left in solution, lime and soda are the ideal substances for use for the purification of all ordinary water supplies so as to render them fit for boiler use and to prevent the accumulation of scale in heaters and boilers.

#### Soda Ash and Lime.

If it is desired to remove the lime, magnesia or iron from the water, the first step is to find a way to convert them into an insoluble condition. These mineral impurities are held in solution by the acids combined with them, such as carbonic, sulphuric and hydrochloric. Carbonates of lime, magnesia and iron can be made insoluble by removing from the water the free or loosely combined carbonic acid, by means of caustic lime (Clarke process), and the sulphates and chlorides of lime and magnesia by the use of carbonate of soda (soda ash), because the sulphuric acid or hydrochloric acid has a stronger affinity for soda than for the weaker bases. By the addition, therefore, of these two reagents, in the proper proportions, to the hard water a chemical reaction takes place, followed by the precipitation of the lime, magnesia and iron. In a properly constructed apparatus these impurities can be removed from the water and at the same time the mud and bacteria are mechanically removed and the organic matter materially re-When waters contain only a small amount of duced. free acid the treatment used is the lime and soda ash, the same as in other cases; but when the waters high in sulphuric acid (as, for instance, the Yough River or mine waters) another treatment is employed. erite is used for the removal of the acid and whatever sulphates will combine with it are precipitated. The disadvantage, however, in using this substance is that it is insoluble, and this makes its use, in anything but an intermittent system, practically impossible. The softening and purification of water is an exact process, because an exact amount of chemicals is used to remove a known quantity of impurities, previously determined by chemical analysis. Therefore the cost varies with the quantity and character of the impurities which the water The following is a table showing the amount of impurities removed from water by the chemicals usually used:

Caustic lime.	Soda ash.
Price per pound, cents0.25 to 0.33	0.88 to 1.15
Calcium carbonate 1.78	
Magnesium carbonate 1.50	***
Calcium sulphate	1.28
Magnesium sulphate	1.15
Calcium chloride	1.04
Magnesium chloride	0.90

It might be interesting, at this point, to give some idea of foreign matter brought by a water into a steam boiler, and to one who has never figured this out the amount is astonishing. For instance, in a 500 horse-power plant evaporating 30 pounds of water per horse-power, or 15,000 pounds per hour, equal to about 18,000 gallons per day, it amounts to 3.285 tons in 365 days, when the water contains 7 grains per U. S. gallon, and 13.14 tons for water with 28 grains.

There is some objection to the use of soda ash directly in the boilers, because it has a tendency to make the water foam; but there is a great difference between using soda ash in a softening plant and using it directly in the boilers. In a properly designed water purifying plant the carbonic acid is all absorbed first, and the soda ash does not go into the boilers as a carbonate or bicarbonate, but always as a sulphate or chloride, having decomposed the sulphate or chloride of lime and magnesia. Under certain conditions the same results take place in boilers. For instance, if a raw water contains no carbonic acid, or carbonates, and if the soda ash is used directly in the boiler, a decomposition takes place at once and the soda unites with the sulphuric and hydrochloric acid, and the carbonic acid of the sodium carbonate unites with the calcium and magnesium, precipitating them as sludge. No foaming due to sodium carbonate takes place under these conditions. But if

raw feed water does contain carbonic acid or carbonates, and the sodium carbonate is used directly in the boilers, then it first absorbs the free carbonic acid, which holds the carbonates in solution, and becomes a bicarbonate of soda. Heat drives this extra carbonic acid off, and it is this decomposition of bicarbonate of soda which is one of the causes of foaming. This is aggravated if there is any grease or oil carried over from the feed water heaters to the boilers.

The concentration of sodium salts, other than carbonates, will foam, but there is no good reason why there should be a concentrated solution when there is a good blow off cock on the boilers and an intelligent engineer to use it. There are other causes of foaming, such as organic matter, when surface water is used for feeding boilers.

Sodium and potassium cannot be extracted from water by chemical means, although it is sometimes claimed by eager salesmen that all potassium and sodium salts can be removed or precipitated from a raw water by their apparatus or by the chemical reagents used by them. It is absolutely impossible to remove from water, by sedimentation or filtration, any impurities, unless they can first be converted into a state of suspension, either by heat or chemical treatment. All sodium and potassium salts, whether sulphate, chloride, nitrate, carbonate, phosphate or fluoride, &c., are soluble in water under the temperatures in steam boilers. None of these can be precipitated either by heat or chemical treatment, and therefore none can be removed in any type of water softening and purifying apparatus. There is but one method, and that is distillation; but that is what a steam boiler does when it makes steam. It is true that alkaline salts can be decomposed by chemical treatment, but no benefit is derived, as the alkaline base merely changes its acid radical to a new salt, which is still soluble in water.

The process of softening and purifying water is based upon the exact quantity and chemical character of the impurities in the water. It is a method based upon an accurate chemical knowledge, and does not require the imagination of any man to prove its efficiency.

The Porter-Clarke process of precipitating carbonates of lime and magnesia by means of caustic lime, and the sulphates and chlorides of lime and magnesia by the soda ash treatment, makes it possible to get a clear feed water low enough in scale forming substances to fulfill all requirements. True water softening is an exact process. By this is meant that the exact amount of lime must be put into the water to remove all the carbonates of lime and magnesia present, and the exact amount of soda ash to decompose all the sulphates and chlorides of lime and magnesia, no more and no less. If it is desired to run at the lowest cost of operation; the apparatus must be so simple that any man who has no knowledge of chemistry can operate it, and of whom nothing but the mechanical work is required.

#### The Continuous System,

The apparatus designed to accomplish this may be divided into two classes: The intermittent, or settling tank, system, and the continuous system. The apparatus designed for the continuous process consists usually of a settling tank, wherein the water, after the addition of the solutions of lime and soda, is made to flow through separate spaces between series of intercepting plates in order to effect the mixture of these reagents with the water. It is then passed to the bottom of the tank through a pipe and finally rises again nearly to the top, where it overflows in a continuous stream. These conditions are varied in every possible shape and manner, and give rise to the different systems.

A properly designed continuous system is one in which the lime is fed into it as a saturated solution proportion of the flow of water. The lime treatment is completed before the soda ash is introduced, so that it can be determined whether the lime treatment is correct or not. The soda is then introduced in proper amount, with thorough mixing of water with chemicals, either mechanically or otherwise. The water should then be given ample time for settling and clarification, and finally

passed through a properly designed filter for removal of the light, floating matter.

This system can be used with good results under the following conditions:

- When the quantity of water required is uniform or where a clear well is used to take care of the variations in the amount of water needed.
  - 2. Where the water is uniform in character.
  - 3. Where small floor space is available.
- Where it is impossible to obtain sufficient water to furnish the quantity of water required by an intermittent system in a limited period of time.
- 5. Where very large quantities of water are required the continuous system is the best on account of the reduced floor space required, and because the system is large enough to warrant the attention of a competent man.

#### The Intermittent System.

The intermittent system consists of two or more settling tanks provided with mechanical stirring devices in order to thoroughly mix the lime and soda with the water in one tank, after which the water is allowed to settle, while the water in the other is being treated or drawn from it. In this system the water can be softened and purified with accuracy and uniformity.

The principal objection to this system is the ground room it occupies and the quantity of water which must be supplied to it in a comparatively short time, to allow for treatment and settling. The necessity for using very large tanks has, in a measure, been overcome by using a filter to mechanically remove the floating sludge which does not completely settle in the time allowed in the tanks. This plan is not in any sense an obselete one, for plants are being installed at the present time in this country among the largest manufacturing concerns. To some the settling tank plan-may seem crude in comparison with the more elaborate plants working upon the continuous process.

Among the many advantages of the intermittent settling tank system are:

- 1. The absence of automatic chemical feeds.
- It can be operated by the engineer or his assistant without interfering with their regular work.
- 3. A constant quantity of raw water is collected to be treated with a uniform amount of chemical reagents. With this plant an excess or insufficiency of chemicals is avoided and therefore a uniform character of the purified water is furnished, while the simplicity of the apparatus enables an unskilled workman to obtain as good results from it as an expert chemist.
- 4. The mechanical stirring results in the agitation of the raw water with the chemicals, and thus insures an intimate mixture and very materially hastens and soon completes the chemical reaction.
- 5. The sludge of previous purification, which has settled to the bottom of the tanks, is mixed with the water by the action of the mechanical stirring devices. This insoluble matter moving in the water gathers together with the new, finely divided precipitate of lime and magnesia, aids chemical reaction and assists the chemicals in clarifying the water.
- 6. The sludge collected in the settling tanks relieves the filter bed, so that the filter can be run from five to six times as long without cleaning as would be the case were the sludge all intercepted by the filters.
- 7. Inasmuch as the settling tanks do not usually require washing or emptying oftener than once a week, the amount of wash water required is a very small percentage of the total amount purified.
- 8. The water can stand for some time in order to get complete chemical reaction between the soluble impurities of the water and the chemicals added. Every chemist understands that no chemical reaction is instantaneous. If the lime and magnesia are not completely removed in the purifying apparatus they are sure to precipitate in the piping, heaters and boilers.

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9. The perfect quiet of the water gives an opportunity for complete settling and renders unfiltered water clearer than that from any other apparatus not using

filters or from exhaust steam heaters in which crude filters are employed.

- 10. The operation of this apparatus is the method followed by the chemist in the laboratory, but on a larger scale and with minor modifications to suit the conditions.
- 11. The arrangement of two settling tanks permits an accurate, daily record to be kept of the amount of water evaporated in the boilers. This feature will be appreciated by careful managers of large steam plants who have a regard for the coal pile.

Two tanks are usually used. These tanks are filled alternately. The chemical reagents are mixed in a small tank placed upon the top of the settling tanks, and are washed into the water while the tank is filling. The mechanical stirring devices, which consist of paddles revolved by suitable gearing and operated by power, mix the hard water and the reagents together, at the same time stirring up the sludge of previous purification from the bottom. This floats in the water and hastens the chemical reaction, and causes the new, finely divided precipitate to gather into large, flocculent or woolly flakes, enabling it to settle quickly as soon as the water stops moving.

The paddle stirring device is the simplest and cheapest on the market. With reasonable care it cannot get out of order. It does not have to be cleaned to be kept in working order. Steam has been tried and finally abandoned on account of the quantity required. Air, in most waters, will not do, for all contains some carbonic acid. This is just what is to be removed by the lime treatment, and the success of any purifying plant depends on the successful removal of the free or loosely combined carbonic acid, or, in other words, on a proper treatment There is also a tendency of throwing back with lime. into solution some of the carbonates, due to the dissolved carbonic acid from the air used for stirring. Thepaddle stirring device can be driven by a small engine, and only in extremely large plants does it require over 3 horse-power.

The softened water is taken out of the tank by means of a hinged floating outlet pipe arranged to rise and fall with the level of the water, so that the clearest water is drawn from the top of the tank. This method is preferable because the water from the top carries the least amount of floating lime sludge into the filter beds, and in this way the filters can be run the longest possible time without having to be cleaned, the time varying from 5 to 14 days. Naturally, the connections for filling the tanks, and also to wash out the sludge, are placed in the The washing of the settling tanks is necessary only when the sludge collects to so large an amount as to interfere with the stirring device. A pressure filter can be used in connection with these plants, the water flowing from the treating tanks to the boiler feed pumps and then being pumped through the filter into the heater and on into the boilers. If an open heater is used the water from the treating tanks flows into the heater and is pumped from the heater, through the filter, into the boilers. The water thus purified will not foam, provided the blow off cock is used properly to prevent the concentration of those impurities which cannot be removed by any purifying system or apparatus.

This process will render the most turbid waters clear, because the large amount of sediment contained in some waters (which is found so hard to filter by the ordinary continuous process plant) is, in this apparatus, the means by which the water is clarified. That is, the mud or sludge assists precipitation and helps to remove that of the new raw water, which at the same time does not deposit on the filter bed and thus necessitate frequent cleaning. Properly softened and purified water not only prevents the formation of new scale, but brings about the removal of the old scale. By the continual evaporation, the water reaches a point where it can no longer hold more foreign matter in solution. Therefore, the unequal expansion of the metal and the nonconducting scale kept cool by the purified water tends to loosen the crack off the old scale. The latter then floats through the tubes and shell (there being no new deposit of lime and magnesia to further cement it). That has been the result

.....\$3,160.88

in the different places where water purifying plants have been installed. Of course, the removal of this old scale, when using only purified water for this purpose, requires longer time, but it is accomplished with less danger to the boiler, because no injury can come to the metal from the water thus purified. There is also no danger of burning the sheets by the accumulation of scale, which would result from the introduction of some acid or other material into the water.

The removal of scale necessitates frequent shut downs, the cost of labor and the expense of repairs, aside from the loss of energy of fuel due to the nonconducting property of scale. This depends somewhat, of course, upon the chemical composition of the scale.

All sorts of tables, and some of them from good authority, are circulated by manufacturers of so-called scale preventives, and while they are probably very much exaggerated and possible unreliable, still, it has been proved by practical experiments that metal covered by nonconducting material must be heated to a much higher temperature in order to boil water contained therein than if the metal is clean.

There can, therefore, be no possible doubt that a scaled boiler requires the use of more heat to generate a given amount of steam than one which is clean. Of course, the results vary with the different types of boilers, and to such an extent that no accurate table can be prepared to prove the exact amount of additional fuel necessary for the generation of a pound of steam under these varying conditions.

The purification of water before entering the boiler results in a saving in the following ways:

It saves the labor of cleaning the boilers and heaters, piping, &c. Saves the cost of repairs and saves fuel.
 In the latter instance the reasons are evident.

The heater is kept clean and the feed water can be raised to a higher temperature.

Coal is not used to heat the impurities in the water or the quantity of compound which you put in to prevent scale formation.

The heat is all used in the boilers to make steam and make it quickly and well from the purified water.

5. Purified water keeps the metal of the boiler free from scale and loosens up the old scale in parts inaccessible to the man who enters to clean the boiler, and a higher degree of evaporation is possible than through any other means.

6. Purifying the water is the only way which admits of getting the full benefit of the high evaporating power in water tube boilers and furnaces in which water tubes are used for grate bars, because there is no danger of the tubes becoming filled with scale and then burning off or leaking.

Let us see what it looks like in dollars and cents for a year's run. The following statement was taken from the books of a manufacturing establishment having a 200 horse-power plant, for one year preceding, also for the second year after the installation of a water softening system. Unfortunately, no record of the fuel saved could be obtained, as it was not considered of sufficient importance by these people, on account of the coal being taken from their own mine.

I have, however, assumed that it will require 1 ton of coal for heating a cold boiler to steam, and the evaporation increased from 10 pounds of water per horse-power per hour, per pound of coal, to 10.1 pounds.

Cost of operation without water softening plant: Cleaning eight 250 horse-power boilers each	
once in two weeks, 208 cleanings per year, at \$20\$4,160	
208 tons coal, at \$1 per ton, to get steam on	
boilers cooled by cleaning 208	
Yearly extra repairs on eight boilers due to	
bad water 150	
Boiler compound for eight boilers, per year 300	240
Cost of operation with water softening plant:	318
Yearly cost of chemical reagents to treat 60,000 pounds of water per hour, at % cent	
per 1000 gallons	
Yearly interest, 8 per cent., and depreciation,	
10 per cent., on \$4500 720	
Yearly cost of operating plant, at \$1 per day. 365	
Washing eight 250 horse-power boilers each	

per year, at \$8	
boilers cooled by washing	1,924.88
Saving by using softened water (about 63 per cer on \$4500)	\$2,893.08
bollers free from scale, 1,440,000 gallons of water should be evaporated each 24 hours with 71.28 tons of coal, at \$1 per ton, a yearly cost of	20 80 \$267.80
Estimated saving, over 70 per cent. on	

once every three months, or 32 washings

#### Labor News.

\$4500 investment....

The wages of the employees of the Cambria Steel Company, at Johnstown, Pa., will be readjusted on February 15, the general basis being the scale in force before the advance of wages on July 1, 1902. Over 10,000 men are affected.

A part of the molders employed by the Seaboard Steel Casting Company, at Chester, Pa., have struck, but the company have not been inconvenienced greatly by the trouble. The men claim that a 10 per cent. wage reduction was not justified by trade conditions.

A cut in wages, that will amount to about 10 per cent. on piece workers, has gone into effect at the plant of the Standard Steel Company, at Burnham, Pa.

Boiler makers at the Cliff Company's Works, in Scranton, Pa., have struck because of a wage reduction, but the company continue to operate their plant.

The entire molding department of the American Steel Casting Company, Chester, Pa., has been closed for an indefinite period. The shut down was the result of a 10 per cent. reduction in wages, which the men refused to accept.

About 75 riveters in the employ of the Jenkins Machine Company, now laying the great steel conduit from the Dufferin Islands, on the Canadian side at Niagara Falls, to the power house below the falls, went on strike on February 3, demanding an increase in pay. The strike tied up the field work of the company and forced about 200 other employees out of work.

The master plumbers and building contractors of Sioux City, Iowa, have decided to hold "open shop" after March 1. A bitter war is anticipated.

The West Indian Cruise of the Mining Engineers. The projected West Indian cruise of the American Institute of Mining Engineers will begin at New York, March 8, on the regular cruise of the Hamburg-American Line, by the steamer "Prinzessin Victoria Luise," following approximately the itinerary originally contemplated, except that it seems desirable to omit Trinidad and substitute therefor Nassau, Jamaica, St. Thomas and Bermuda. The steamer will reach Nassau on March 11, and Havana two days later. She will then proceed to Santiago de Cuba and the iron mines at Daquiri; thence to Port Antonio and Kingston, Jamaica; San Juan, Porto Rico; St. Thomas, Martinique, Bermuda and return to New York, in just 25 days from the date of her depar-Most courteous assurances of welcome have come from the President of the Cuban Republic and the Governor of Martinique, in addition to the cordial invitation to visit Porto Rico which has been extended by Governor

Hunt. The steamer's accommodations are almost completely filled at this date, hence those desiring to accompany the excursion should communicate as quickly as possible with Dr. David T. Day of the United States Geological Survey, Washington, D. C., who has charge of the excursion.

#### A Powerful New Wire Forming Machine.

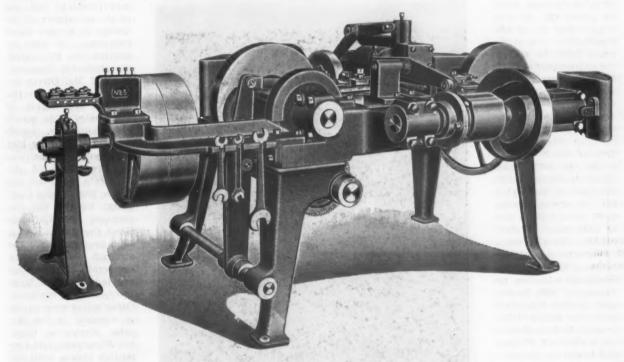
Constantly greater demands are being made by the trade upon the manufacturers of wire forming machinery, and one of the most pressing calls is for a machine to form wire of comparatively large sizes and in pieces of considerable length. To meet this demand there has been designed the four-slide automatic machine shown in the illustration. This is said to be the most powerful machine of its kind ever built, having a length of feed adustable to a maximum of 15 inches and capable of handling wire as large as 5-16 inch in diameter. Other machines have had as long a feed, but none, it is believed, have combined

furthermore, are made of about twice the length ordinarily used.

In the smaller sizes of machines of this class the form holder is supported on top of two or more round posts projecting upward from the bed; in the new machine a cast iron bracket of arched form is used, its feet bolted directly to the bed. The arched form of this bracket permits the use of a back slide, and affords easy access to its tool. This form holder is adjustable to and from the wire line, and is guided by a key in the bed.

The capacity of this machine—namely, the forming of wire as large as 5-16-inch diameter and 15 inches long—makes necessary the provision of long strokes for the slides, especially for the two side tools. The latter, in this case, have strokes of 5 inches, while the front and back slides have strokes of 2½ inches. To secure the necessary rigidity the bed of the machine, which is of box form, is not only made heavy, but is strengthened by two deep cross ribs extending transversely of the machine near the middle.

The weight of the machine is about 5500 pounds. It



A POWERFUL WIRE FORMING MACHINE.

with this length of feed a capacity for so large a size of wire.

While most of the general mechanical features of the new machine are similar to those of the smaller sizes produced by the same makers, important changes in construction have been necessary in order to meet the greater stresses due to the heavier service. In the smaller sizes the lower end of the feed lever is pivoted upon a hanging bracket, which gives sufficient strength; in the heavier machine, where larger wire and long feed are required, it has been found necessary to provide a more rigid rocking point for the feed lever. In the new machine this is accomplished by forming the support upon the legs of the machine, the feet of the machine being at the same time separated so as to give a greater stability by increasing the floor base.

Another point which demanded attention in designing a machine for this heavy work was the rigid supporting of the former around which the wire is pressed. To press a wire of ¼ or 5-16 inch diameter around a form, possibly making some short bends, requires more pressure than one without experience in the work would realize. To do such work satisfactorily, not only must the shafts of the machine be of large size, but the cams actuating the four slides should be placed upon the shafts as closely as possible to rigid supports or bearings. It is stated that special attention has been paid to this point, all cams being placed closely adjacent to bearings, which,

is built by the E. J. Manville Company of Waterbury, Conn., and is by them designated as their No. 5 machine.

#### The German Trade in Beams and Channels.

The following statistics show the production and shipments of beams, channels and Z-bars from German works during the years enumerated:

	Percentage				
			0	f export	Total
		Domestic	Export	ship-	shipments.
	Production.	shipments.	shipments.	ments.	Metric tons.
Year.	Metric tons.	Metric tons.	Metric tons.		
1888	. 352,464	284,281	46,292	14	330,573
1889	. 400,416	356,703	56,608	14.1	415.311
1890	. 393,492	298,021	53,852	15	351,873
1891	. 371,895	295,260	75,640	20.4	870,900
1892	. 416,391	327,130	81,566	19.9	408,896
1893	. 499,406	386,620	101,853	20.8	483,473
1894	. 561,336	427,454	121,124	22.1	548,578
1895	. 651,890	492,116	153,645	23.7	645,761
1896	. 811,519	620,788	159,763	20.4	780,551
1897	. 863,627	654,203	149,388	18.6	803,591
1898	. 972,977	792,173	188,018	19.2	980,191
1899	.1,099,991	889,377	189,846	17.6	1,079,223
1900	. 990,898	692,031	181,728	20.8	873,759
1901	. 853,199	562,256	299,300	84.7	861,556
1902	.1,054,576	672,213	326,097	32.7	998,310
1903	.1,196,655	800,754	367,602	31.5	1.168,347
-04		*	0.00		

Considering the population of Germany, the home requirements have developed enormously. As an exporter of beams and channels it has long occupied the first place.

#### Henry W. Oliver.

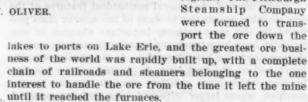
Henry W. Oliver, for many years one of the most prominent of Pittsburgh business men, died at his home in Allegheny, Pa., on February 8, aged 64 years. Mr. Oliver's life was a series of magnificent climaxes. Startling successes followed periods of keen depression. His plans were unusually far in advance of those of his fellows and rivals, and their execution was accomplished with that daring which made even rivals pause to admire and praise. He displayed exceptional ability both as a manufacturer and a railroad financier. Unlike others who have won and lost fortunes, the close of his life found him in the possession of ample means, most of it invested in real estate in Pittsburgh. Henry W. Oliver was a self made man. He was born in the town of Dungannon, Ireland, February 25, 1840. His parents settled in Pittsburgh in 1842. Henry was educated in the

public schools and Newell's Academy, and started to work, when about 13 years old, as messenger boy in a telegraph office. About two years later he entered the employment of Clark Thaw, general forwarding agents, where he remained for some years. In 1859 he became shipping clerk for the iron manufacturing firm of Graff, Bennett & Co. In 1861 he enlisted in the Twelfth Regiment of Pennsylva-Volunteers, serving until the end of his term of enlistment of three months. He also volunteered at the time of Lee's invasion in 1863 as an emergency volunteer. On January 1, 1863, in partnership with William J. Lewis and John Phillips, he organized the firm of Lewis, Oliver & Phillips, and began to manufacture bolts and nuts on a small scale. In 1866 Mr. Oliver's two brothers were admitted to the firm, who continued in business until 1880, when the partners organized the firm of Oli-

ver Bros. & Phillips. In the meantime the business of the firm had been enlarged to an enormous extent, until they were among the largest manufacturers of bar iron In 1888 the and iron specialties in the United States. works were incorporated under the name of the Oliver Iron & Steel Company, which are still carried on, Mr. Oliver at his death being chairman of the Board of Directors. In the meantime he had become identified with other industrial and railroad affairs in Pittsburgh, notably the Pittsburgh & Lake Erie Railroad Company. Mr. Oliver was one of the original projectors of the road, and one of the largest stockholders. In 1883 and 1884 he sold out to the Vanderbilt interests, thereby giving them control of the road and introducing an additional trunk into Pittsburgh. . Mr. Oliver afterward became largely interested in the Pittsburgh & Western Railroad, and from 1889 to 1894 he was its president. He was associated with Thomas M. King and James Callery in obtaining control of the Pittsburgh, Cleveland & Toledo Railroad. Later came the acquisition of the Painesville & Youngstown. With Mr. King and others he was associated also in the building of the Pittsburgh Junction Railroad. He was instrumental in the financing and

building of the Akron & Chicago Junction Railroad. Oliver was energetic in making improvements. connection the present large steel car industry had its origin. The master car builder of the Pittsburgh & Western Railroad, the late Thomas Anderson, had evolved original ideas on steel car construction, and he submitted his plans to Mr. Oliver, who referred them to Charles T. Schoen, who had been working along similar lines. result was the installation of the Pressed Steel Car Company, who were financed under Mr. Oliver's direction. Mr. Oliver formed the Oliver Wire Company, whose works were among the best in the present American Steel & Wire Company. He was heavily interested in the Monongahela Tin Plate Company, now part of the Ameri-He was heavily interested in the can Sheet & Tin Plate Company. He was largely interested in the Pittsburgh Coal Company, and had been a director of the company since they were first formed. In recent years he had become interested in Arizona copper development in the Bisbee district, especially in

the Calumet & Arizona Mining Company. was president and one of the organizers of the Oliver & Snyder Steel Company. He also organized the Pennsylvania Malleable Company. In 1892 Mr. Oliver became interested in the Mesaba ore region of Minnesota. The result of negotiations, which were conducted by him with great success, was the acquisition of the Mountain mine by the Oliver Iron Mining Company, formed for the purpose. The Carnegie Steel Company, having been brought to see the strength acquired by ownership of their own ore lands, took a large interest in the company. Other mines were rapidly acquired in the Mesaba, Marquette, Gogebic, Menominee and Vermillion ranges until the company controlled the larger part of the large and valuable mines in the Lake Superior ore regions. The Pittsburgh Steamship Company were formed to trans-



Mr. Oliver was public spirited in a high degree and took an active interest in politics. From 1879 to 1882 he was president of the Common Councils of Pittsburgh. He was delegate from Pittsburgh to the Republican national conventions in 1872, 1876, 1888 and 1892, and was a Presidential elector from the State at large in 1880.

In 1882 he was selected by President Arthur to represent the iron and steel interests of the country on the commission which was appointed to draw up and submit a new tariff bill to Congress. It was largely through his work on this commission that the metal schedule of 1883 was so shaped as to be mainly satisfactory to the manufacturing and industrial interests of the country. He was a member of all the leading clubs in Pittsburgh, and of the Union League, Union Club and Lawyers' Club of New York. He leaves a widow and daughter.



HENRY W. OLIVER.

### William A. Sweet.

William Avery Sweet, the well-known steel maker and manufacturer, died at his home in Syracuse, N. Y., on the evening of January 30, 1904. Born in Pompey, Onondaga County, October 12, 1830, he was educated at the country schools and Pompey Academy. At the age of 18 he went as an apprentice to an edge tool maker and from that to blacksmith and machinist work. In the early fifties he worked at gun making, invented one of the early breech loading guns, which loaded Government paper cartridges used at that time, and percussion caps, but in a Government contest he was unsuccessful, as Maynard used a percussion pellet, thus making his gun the more simple of the two. About 1855 he went into the gun business with William Malcolm, but the financial part of the enterprise was not satisfactory and he drew out. In 1858 the firm of Sweet Brothers, ma-

chinists, were started in Syracuse, of which Anson A., William A. and John E. Sweet and a brother - in - law, C. C. Bates, were the members. In 1859 the two younger members withdrew, and Anson A. and William A. continued, with William B. Cogswell as a member of the firm, and began the mauufacture of mowing and reaping machine cutting apparatus. Mr. Cogswell sold out after a year to George Barnes, and the firm became Sweet, Barnes & Co., becoming later George Barnes & Co., and later still the Whitman & Barnes Mfg. Company. This business grew to such an extent as to require a large importation of steel, and the making of crucible tool steel was added, and that at a time when that industry was in its infancy in this country. In 1868 the firm divided their interests, William A. Sweet taking over crucible steel branch. In addition to the making of crucible

steel, he, under the name of William A. Sweet & Co., carried on the making of bar steel and springs. Seeing the pile of crop ends of steel rails at the Bessemer works at Troy, he conceived the idea of splitting them in three parts, making bar stock of the bottom, spring steel of the web and crow bars of the head. This, after some experimenting, he succeeded in doing, and this was the foundation of what was at that time a fair industry. As the Bessemer steel makers became more numerous there was for a time a supply of crop ends, but after a time the makers gauged the ingots more carefully and the crop ends got so short that it was not profitable to use them. This difficulty soon ended, as the foreign vessels brought over the worn out English rails as ballast, and these he bought, broke up and split as he had the crop ends. This experience soon developed the fact that there was a vast difference in the character of the metal in the English rails from the American, and from each other, some proving too brittle for the work. It was then that he turned the knowledge he had gained in making edge tools to account. He found that it was only necessary to finish the rolling at a low red heat to make tough bars out of the brittle steel, and now for over 30 years the work in his mill has always been so

treated. This finishing at a low red heat, which is now in use in finishing steel rails and designated the "heat treatment," was fully explained to the steel workers of this country quite 21 years before it was employed by others, and it was gloriously ridiculed by the late Capt. Wm. R. Jones at the Pittsburgh meeting of the American Institute of Mining Engineers, about 1877.

Mr. Sweet was possibly the first to convert Bessemer steel into spring steel, and the furnaces were of his own design, as unlike the English as a square box is unlike a funnel. The furnaces were equipped with mechanical stokers, which have probably been in use longer than any other design in this country, and included the steep incline grate. They have proven as economical as the well-known regenerative furnace.

At about this stage of the development the old rail part of the business seemed to overbalance the crucible part, and an abandoned brewery was purchased, into

which the tool steel part was moved, and since Sanderson Brothers of Sheffield, England, desired to start a branch in this country they bought an interest, and thus was established the Sanderson Brothers Steel Company, now a part of the Crucible Steel Company of America.

Some time before Mr. Sweet sold his interest in this concern the Solvay Process Company were organized by Mr. Cogswell, in which he took an interest, and was one of the directors for about ten years. This industry had its dark days, like others, and some of the directors were ready to back out, when Mr. Sweet said, "Go ahead," and seconded Mr. Cogswell, whose engineering ability, when free to modify the system, soon turned the scale and the present great industry was developed.

His ideas were always for the best. He

was the first to make steel tire, steel crow bars and steel toe calks for the market. His works were a model of neatness, and although they were center of the city they were always surrounded by elm trees, and had no resemblance to the ordinary steel and rolling mills. He built the most of his own machinery-engines, roll trains, shears, &c., and the machinery was of the machine tool quality. He was the first to put in a telephone and an electric light for use in his city. He was prolific in invention and undaunted in expending in experiments; progressive, not only in his business, but he also fought for what he deemed to be for the best interest of his home city. Mr. Sweet was a man of great mental caliber, very positive in his beliefs and emphatic in stating them. He made more mistakes than most men, but his successes overbalanced them; and as his faults are forgotten, men will give him credit for having been of some use to the



WILLIAM A. SWEET.

George L. Brown, formerly manager for receivers of Ciairton Steel Company, has resigned and is now general manager of W. P. Snyder & Co., Frick Building, Pittsburgh.

# The Iron Age

# New York, Thursday, February 11, 1904.

DAVID WILLIAMS COMPANY,	-			-				PUBLISHERS.
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JOHN S. KING,	-	-	-			-		BUSINESS MANAGER-

# The Meager Surplus.

Since attention was directed in these columns to the marked growth of national expenditures, and since the chairman of the House Appropriations Committee warned the House that the problem was how to reduce appropriation bills \$42,000,000 in order to avoid a deficit in the next fiscal year, the Treasury has issued its statement of receipts and expenditures for January, and for seven months, showing that the deficit of last month reduced the surplus for the current fiscal year to \$1,641,680. The last five months of the fiscal year may do better than the first seven-last year they did not do quite so well-but they will have to do a great deal better than the first seven in order to realize the Secretary's estimate in November of a surplus of \$14,000,000. In the current fiscal year there has been a large decline in the revenue from customs, offset in small part by an increase in internal revenue and miscellaneous receipts, and there have been increases in the general cost of government, the navy and pensions.

This small surplus, of course, has no bearing on the payments to be made on account of the Panama Canal, because they can be made out of the funds now in the Treasury. But Mr. Hemenway, chairman of the Appropriations Committee, reminded the House that it would not do to draw on these funds to meet the annual expenditures of the Government, for outside of current appropriations there must be paid \$50,000,000 for the isthmian canal, besides what is spent for work there, \$27,000,000 for the increase of the navy, \$37,000,000 for rivers and harbors and \$17,000,000 for public buildings, in all \$131,000,000, reducing the surplus to \$93,000,000, a smaller sum than for the past ten years.

These items for war ships, rivers and harbors and public buildings, ordered but not yet paid for, suggest a re cent device for promoting extravagance; until recently public officers were prohibited from entering into contracts beyond the amount of the appropriation. Recently the practice has been permitted of contracting for the whole of a project, though Congress appropriates for only a small part of it in one year. The Government is lightly committed to a project that will cost \$3,000,000, because only half a million will have to be appropriated the first year. There is now due, or will be due within the near future, \$54,000,000 for river and harbor improvements and public buildings, for which the appropriations have been made, and as the current revenue will not meet it, it must be paid out of the net cash balance in the Treasury, upon which it will not do to draw very much more, for the estimates for the coming fiscal year are exclusive of the requirements of the sinking fund. But besides paying these expenses, for which appropriations have been made, it will be necessary to appropriate over \$136,000,-000 for public works already authorized chiefly by the last Congress, but not appropriated for. Of this amount more than \$82,000,000 is for the increase of the navy, \$36,000,000 for rivers and harbors and \$17,000,000 for public buildings. Indeed, as the net cash balance must be drawn on to the extent of \$81,000,000, besides the canal payments, to meet appropriations already made, a large deficit may be said to have been already created.

The estimates submitted to Congress at the beginning of the session were \$23,000,000 in excess of the estimated revenues. As Congress usually cuts the departmental estimates heavily, this apparent deficit did not look formidable. But there are supplemental estimates of about \$19,000,000, making the aggregate estimates \$42,000,000 above the probable revenue. How much is Congress cutting the estimates? Three of the great appropriation bills have passed the House, carrying \$242,000,000, nearly onethird of the total annual estimates, and the reductions therein made are only \$4,116,623. That leaves about \$38,-000,000 that must be cut from the bills for a little more than two-thirds of the annual allowance for the Government if a deficit is to be avoided. Congressmen are still proposing huge additional expenditures in various directions, but they cannot be undertaken without greater revenues. Our expenditures have already grown up to our income, and it is a deficit and not a surplus that we must think about.

# The Shortcomings of Annual Statistics.

As the commercial statistics of this country for 1903 are made up and published, we realize more and more what a tremendous year it would have been if the promise of the early months had been sustained. It would have loomed up large in future statistical showings, making annual comparisons. Take the production of pig iron, for instance. Despite the severe curtailment of furnace operations in the closing months, the output for the year surpassed that for any previous calendar year, and 1903 will go down to history as the first year in which the 18,000,000-ton mark was reached. This is an achievement which but a few years back seemed very far from realization. But unfortunately for the statisticians of the future, the yearly figures as they will hereafter be used 18,000,000-ton mark was reached. This is an achievement of the period of which 1903 was such an important part. The record would have been much more impressive if the figures of the second half of 1902 had constituted a portion of the following year. Taking the 12 months from July 1, 1902, to June 30, 1903, the output was well to ward the 19,000,000-ton mark, being 18,720,100 tons, to be exact. This should be borne in mind in future years, when we come to dwell on past achievements and make comparisons for yearly periods. A similar state of affairs occurred during the great activity of 1899-1900. At that time the hight of the heavy demand for pig iron was experienced in the last half of 1899 and the first half of 1900, 14.974.105 tons being turned out in those 12 months. The production of the calendar year 1900 was only 13,789,242 tons. The latter figures are those which appear in the statistical tables now used for comparisons, yet they fall much short of showing the rate of production attained during that busy period. Again, in the last half of 1895 and the first half of 1896 the output was 10,334,986 tons, which was the first time this country reached the 10,000,000-ton mark in any 12-month period, but in the yearly tables 1896 appears with only 8,623,127 tons to its credit, and not until 1898 did the figures show 10,000,000 tons again reached or passed. The same remarks will apply to the figures showing the production of steel and of finished iron and steel products generally. Turning to railroad statistics, the increase in gross earnings in 1903 was greater than in any preceding year. The increases, however, showed a declining tendency, month by month, and therefore the 12month period from July 1, 1902, to June 30, 1903, made a

considerably higher record. As the figures for calendar years are those permanently preserved for statistical comparisons, the real high water mark attained during the period of greatest prosperity ever known will not appear.

# Our Inadequate Export Business in Copper Manufactures.

For years the United States has been the arbiter of the copper markets of the world. 'This country is the greatest producer and the most important exporter of the red metal, and has been occupying an increasingly important position as a smelter and refiner of the raw material from adjacent and distant countries. We exported during 1903 copper ingots, bars, &c., to the extent of 310,-729,524 pounds, valued at \$41,170,059, and imported 136,-707,775 pounds, valued at \$17,262,148, a very large part of it in the form of converted bars, which were refined in our seaboard electrolytic refineries. We treated besides considerable quantities of foreign matte and ore. are, therefore, producing or preparing for the consumption of the leading industrial nations of Europe a very large quantity of raw material. We are sending out year after year great quantities of wire bars, cakes and other forms of copper for rolling mill works, and yet we have progressed very little in the desirable work of substituting for exports of the raw material, shipments of higher forms of the metal.

Our exports of manufactures of copper were \$2,339.729 in 1903, against \$2,092,798 in 1902, and \$1,842,336 in 1901. Considerable copper, of course, enters into our exports of electrical machinery, which amounted to \$5,104,502 in 1903, as compared with \$5,937,643 in 1902 and \$5,623,442 in 1901. It goes out in considerable quantities as a part of many other lines of machinery, and of alloys and products thereof. But even in these latter little headway has been made. Thus the exports of brass and manufactures thereof showed \$2,063,569 in 1903, as compared with \$1,809,312 in 1902 and \$2,078,178 in 1901.

The copper wire and sheet industry has been established in this country for a good many years. Some of the works are splendidly equipped, and are managed by men who have spent their lives in their technical development. At times these works have captured large orders for cable and electrical wires, but the opinion is expressed so far as rolled sheets and similar products are concerned that our makers have pursued a policy commercially, at home and abroad, which has tended to restrict consumption and hamper the most effective utilization of plant.

The growing financial strength of the great Mississippi valley is demonstrating itself in a variety of ways. The agriculturists of that important region, which far surpasses in its productiveness any other agricultural section of equal area in the world, have been favored with five successive years of good crops which they have marketed at high prices. Never before have they made so much money in the same length of time. The cancellation of mortgages on farms is an old story. Very little Eastern money is now invested in Western farm mortgages, whereas up to the present prosperous era the West was a prolific field for Eastern capitalists in search of good mortgage investments. Their own local capitalists can now finance the needs of Western borrowers. For a time there was considerable speculation in land, as Western farmers felt their circumstances growing easier, but this seems to have ceased and they are looking for other investments. Bond dealers in Western cities report an

increasing demand for bonds from their farmer customers, especially for municipal bonds. This is an interesting and gratifying development. It shows that old conditions, when the East was looked upon as draining the vitality of the West in collecting interest on borrowed money, are passing away. With its debts paid and a surplus accumulating in banks or in securities, the West will be a greater factor than ever in the material progress of the nation. Sectional feeling will be allayed and the West will unite with the East in supporting movements designed for the betterment of our financial system. Suspicion will give way to co-operation.

### The Baltimore Demand for Structural Steel.

Exaggerated ideas prevail with regard to the demand for structural steel which may result from the rebuilding of the burned district of Baltimore. Scarcely an article pertaining to the great fire appears in any of the daily papers in which some reference is not made to the advantages which are to accrue to the steel trade from the enormous consumption of steel in the replacement of the burned business structures. One would infer from these statements that an extraordinary amount of steel would be required-say, for instance, hundreds of thousands of tons. The consumption would certainly have to run up to figures of this kind to justify the expectation of the great advantages to be realized from this source. It is, however, quite in line with the incorrect idea generally prevailing that the use of steel in building work has been of very great benefit to the steel trade. The increase in the number of buildings in which steel frame work is used has, it is true, been very great in recent years and public attention is naturally turned in this direction. When people see an imposing building, running up to 20 or more stories, and are told that it is a steel structure, they assume that it is almost wholly composed of steel, and that it has consequently taken a huge tonnage. They are, therefore, quite surprised when they learn that a very large building can be put up with steel frame work which will not involve more than 3000 or 4000 tons in its erection. It is an exceptionally large building which will require as much as 10,000 tons.

The consumption of steel in building work can probably be best comprehended by taking the statistics of steel production in the leading lines. The figures for 1902 are the latest available. According to the statistics of the American Iron and Steel Association, the total production in this country of structural shapes in that year was 1,300,326 gross tons. It must be understood in this connection that the term structural shapes covers not only such shapes as are used in buildings, but other structural forms for use in bridge work, steel cars, shipbuilding, tunnel work and for a number of other purposes. It is probable that less than half of this output actually went into the construction of buildings. The total tonnage, however, was under that of the output of other leading steel products in that year. Wire rods, for instance, which are the foundation of the wire industry, ran up to 1,574,293 tons. Ordinarily the public would be disposed to believe that much more steel would be used in the erection of imposing buildings than in such insignificant forms as wire nails and other wire goods. The tonnage of plates and sheets was double that of structural shapes, having been 2,665,409 tons. Bessemer steel rails much more than doubled structural shapes, the quantity turned out having been 2,935,392 tons. The tonnage of miscellaneous rolled products, such as bars, skelp, hoops, &c., was 5,468,696 tons. These figures show that the popular conception of the importance of the structural trade is

wide of the truth. The burned district of Baltimore will, of course, not be wholly replaced with steel structures. This would be highly improbable. If the quantity of structural steel used in Baltimore buildings within the next six n.onths should run over 50,000 tons, it will be surprising.

There are two ways of looking at the huge borrowings of the Pennsylvania Railroad Company. One is from the viewpoint of conservative financiers who fear that underlying financial conditions are ominous when a railroad company which has secured \$115,000,000 in the past year through the sale of stock and bonds finds it necessary, or even expedient, to borrow \$50,000,000 more on 18-month notes. They class this with the borrowing on the same plan by other railroad companies recently, and argue that the situation cannot be sound when such financing obtains. The other view is from a purely business standpoint. It can be assumed that much of this money will be expended for improvements, as the Pennsylvania Railroad Company has a tremendous amount of work to be done to put its lines in such shape that the congestion of traffic in 1902-3 will not soon be repeated. This work can, of course, be done much more cheaply in slack times, such as the present, than when great activity prevails and both labor and materials are at a premium. If other railroad companies whose facilities need improving will be able to borrow the money necessary and push ahead, it will be highly beneficial to numerous industrial interests now suffering through lack of employment. It should be borne in mind that borrowing of this character by solvent and wellmanaged corporations is very different from financing new projects which must subsequently prove their earning power. Our panics and financial embarassments are usually due to the latter.

The Germans are notorious for their system of selling at very different prices at home and abroad. Some recent figures' indicate the extent of the system of making attractive prices to capture work in neutral markets. They are selling billets to the home trade at 90 marks per metric ton, while they net hardly 70 marks for export. The price for beams at the German mill is 105 marks for the home trade, while export sales net only 80 to 82 marks at shipping port, a considerable distance from the works.

### Recent Drawback Decisions.

The Pacific Packing & Navigation Company, Seattle, Wash., have secured from the Treasury Department allowance of the usual drawback on imported tin plates "measuring 14 x 20 inches and weighing 100 pounds to the box of 112 plates." In liquidation the quantity of imported tin plate to be taken as the basis for the allowance of drawback is placed at 173.96 boxes of tin plate of 100 pounds to the box of 112 plates for each 1000 cases of ½-pound flat salmon cans of 96 cans to the case, provided that for each 173.96 boxes there shall be charged against the records of importation 180 boxes of tin plate.

On the importation of shovels and scoops manufactured by the Wyoming Shovel Works, Wyoming, Pa., in part from imported steel billets, the Treasury Department has issued regulations that a sworn statement must be filed with and made a part of the drawback entry, showing the amount of imported steel billets used, together with the weight of the finished articles, the quantity of valuable waste, the value of such waste at the factory at the time of manufacture, and the price at the works of the imported material.

# CORRESPONDENCE.

Patents and the Patent Law.

To the Editor: I may be premature in addressing you in relation to the editorial on "Patents and the Patent Law," appearing in your issue of January 29, 1904, as I have not had an opportunity of reading the two papers mentioned, but from the extracts therefrom I am constrained to suggest that a fuller knowledge of our patent law, as construed by the courts, would have at least modified the statements of the authors of those papers, if, indeed, it would not have served to suppress the entire motif of the first paper quoted.

The founders of our Government provided in their wisdom in our Constitution a fundamental protection of useful inventions as the, for a time, exclusive property of any one who should first produce them in a form that could be utilized by the general public, and from this provision has grown such an advance of the practical arts and sciences that we, as a producing people, stand in the lead of the entire world. No other provision of the Constitution devised by our forefathers, except that which puts the supreme ruling power in the hands of the people, has done so much to make us what we arethe most free, enlightened and progressive nation on earth. I rejoice whenever attacks are made upon our patent system that the fathers laid its foundation in the Constitution itself, because I firmly believe that the day will never come when two-thirds of the States will agree to its abolishment.

The first author pleads for a law providing for patents only when a new result is produced. A "result" is not patentable, only the means for producing it. If results were patentable when first produced, then this author and every one else would be prevented from producing it by any means. He is paying for a sword to sever his own head from his body. Under our law he is at liberty to produce the (desired) result theretofore produced by another, provided only that he employ means substantially different from those of the prior inventor.

The United States Supreme Court, a tribunal which has not only anchored to sound foundations the provisions of our Constitution having relation to the stability of our Government and the personal rights of all citizens in the varied combinations of civilization, commerce and industries, has also given due, careful and determining consideration to questions arising under the provisions of our patent laws, all of which spring from and are dependent upon that Constitution.

Take the case given by the author, which is stated to be a "flagrant" one. In 1898 the United States Navy Department issued specifications for battle ships which should be provided with armored hatch covers and sliding, water tight doors, which should be operated by hand and by power. Some one in San Francisco dillydallied with the mechanical problem until May, 1899, and in November, 1899, was invited to inspect another apparatus in the Brooklyn Navy Yard for solving the same problem. It seems that the latter party took the precaution, as soon as the solution was reached, to apply for a patent, secured it, sued the parties in the West and procured an injunction. And so the negligent inventor in the race of diligence complains that the more diligent inventor has drawn his claims so as to prevent a "free application of the proper device to accomplish the end in view," and while he does not wish to be understood as opposed to all patents, yet he would abolish patents which "prevent others from using the same combinations or mechanical equivalents."

Why does not the author say at once that he believes in abolishing the entire system? It is remarkable that the limitation which he puts upon patents is exactly what the continuous decisions of our courts, from 1790 to date, hold that a patent does and should cover, to wit: the same or an equivalent combination of mechanical elements.

Lack of familiarity with patent law as enacted, and as construed by the courts, bristles in almost every statement in the extracts. Our courts frequently hold patents to be invalid because they lack evidence of the exercise of the faculty of invention and disclose nothing more than the expected skill of the mechanic. That skill is constantly increasing, and with it increases the difficulty of securing patents. But when invention does exist in the article, machine, process or product, then even the negligent San Francisco inventor will hasten as quickly as any one to secure one of the "patent sharps" to properly draw his claims in accord with rules of law as interpreted by our courts, so as to protect him in his property right to the fruits of his inventive genius.

As to the paper of the second author mentioned in your editorial, and the practice of the German Office, which he commends, and the English practice and the French patent with no claim at all. I have only this to say: The German practice is new, unsettled and attended with difficulties in its application and enforcement, and has the inherent defect of the French system in that it puts upon the court the laborious task of determining the scope of the invention sought to be covered by the patent, while in our system the "claim" declares its scope and the court proceeds at once to determine its validity. Under recent decisions a British patent does not fall if one of a number of its claims prove invalid.

I am taking too much space to properly defend the examining corps of the United States Patent Office. Every action of the primary examiner bears his signature, and is a part of the record. He has the power to, and frequently does, alter and amend his decisions, and while some of the examiners seem to think their duties are to prevent the issue of patents, a majority know they are there to secure the issue of lawful patents. It is only a minority of the primary examiners who are known as "obstructionists." But no ground of complaint exists, But no ground of complaint exists, because appeals from adverse decisions to higher tribunals are provided, and in one, three officials jointly review the actions of the primary examiner; from these three, the Board of Examiners in Chief, an appeal lies to the Commissioner of Patents; and from that official to the Court of Appeals of the District of Columbia.

It is not quite fair to condemn the United States patent system of to-day by citing instances which occurred 51 and 80 years ago, respectively. These complaints against our patent system frequently come from persons who misunderstand all the surrounding and underlying facts, and who do not stop to consider how much we, as a nation, are indebted to that system, nor to what a high grade of perfection it has been brought by Congress and the courts. It seems to me better to honor the fathers for their prophetic wisdom, and their descendants for using to the full the benefits derived from that wisdom, rather than encourage a hungry class that seeks to partake, without just compensation, of the rich fruits of American inventive talent. Respectfully, E. B. S.

Washington, D. C., February 4, 1904.

### The First Magnetic Separator.

To the Editor: The writer of the interesting article on "The Mineville Magnetite Mines," which appeared in your issue of December 17 last, is in error in supposing that the magnetic separating plant, which he states was erected in 1853 by the American Mineral Company, was the first constructed. In passing, it may be stated that, according to Prof. W. P. Blake, the plant was started on October 28, 1852, and was in regular operation before December 21 of that year.

From the American Journal of Science and Arts, Series 1, Vol. XVII, No. 11, July, 1830, I quote as follows from "Mineralogical Journey in the Northern Part of New England, by Charles Upham Shepard, assistant to the Professor of Chemistry and Mineralogy, and Lecturer on Botany in Yale College:"

Since the publication of my remarks upon the Franconia Iron Works in the first number of the present volume, Mr. Richardson, proprietor of the Upper Works, has very obligingly communicated to me some additional information relating to his establishment, which I consider worthy of insertion in the present memoir. Mr. Richardson has introduced into his manufactory, since our visit, the valuable "Magnetic Separating Machine," invented by Samuel Browning of Boston, and of which a patent has been secured. The following abstract of

Mr. Richardson's description of this apparatus will conclude my remarks upon the Franconia Iron Works:

"The machine consists of a frame, 4 feet long, 3 feet wide and 6 feet high, containing two cylinders which embrace nearly 3000 magnets, together with a third cylinder furnished with cams to move a wire screen placed on friction rollers.

The ore, after being roasted in the kiln, is wheeled to the pounding house, which contains the machine; here it is pounded through grates, the bars of which are 1/4 inch apart, and thence conveyed to the hopper of the machine, from which it runs into the sieve, in required quantities, regulated by a gauge. Passing through the sieve, it is conveyed by an apron or guide under the first or largest cylinder, from which the magnets take up all the ore they are capable of holding, leaving the remainder to pass on, regulated by another apron, to the second cylinder, which attracts the balance; while the residue, being siliceous matter, is suffered to drop down and is thrown away, as it accumulates, by the workmen. The cylinders constantly revolve upon their axes, and the sieve is subjected also to a slight motion. A large brush is maintained in front of each cylinder, which, as the cylinder turns, removes the ore accumulated during its revolution. The ore thus brushed from the cylinders is conveyed by a spout or trough, adjusted at a proper angle, from the pounding house to the forge. The whole machine is kept in motion by water power.

"By the use of this apparatus, Mr. Richardson assures me that he saves 150 bushels of coal in the manufacture of every ton of iron; and, besides, that he is enabled to produce iron of superior quality and with a considerable saving of time: advantages, it would appear, of sufficient consequence to introduce the invention of Mr. Browning into very general use."

From Volume XXI, 1832, is taken the following extract from a letter from Mr. Richardson, of September 26, 1831: "The magnetic separator continues to answer a valuable purpose. Mr. Browning has recently put one of his machines in operation in Peru, which brings into use an ore bed that before was worthless."

United States patents for a "magnetic cylinder" were obtained on October 13, 1810, and November 25, 1814, by Samuel Browning, a resident of Franconia, N. H., so it would appear that the gentleman began his efforts to magnetically separate the ores of that vicinity some 20 years or more before the date of the publication cited. When the patents were granted electro-magnets were unknown, so the magnetic cylinders must have been made up of permanent magnets, and since they necessarily would produce weak fields the apparatus could not have been very efficient. In 1820 the magnetic properties of the electric current were recognized and steel needles placed in a helix were magnetized by Argo and others, which was followed by the development of the soft iron electro-magnets by Sturgeon, who presented one to the Society of Arts in 1825. Five years later Mr. Browning had at least two separators, using his magnetic cylinders, in operation, and, since the invention, which apparently had lain dormant so long, was brought into use so soon after the announcement of the discoveries mentioned, the writer is inclined to the opinion that electromagnets were substituted for permanent magnet in their construction, thereby increasing the power of the apparatus and making it the success described by Mr. Rich-

It is needless to say more; the foregoing quotations proving that the magnetic separation of iron ore was practiced on a commercial scale in New Hampshire some 23 years prior to the erection of the plant of the American Mineral Company.

The sole object in operating the Franconia plant was to obtain rich iron concentrates for smelting, while the plant erected at the Sanford ore bed, as stated by Prof. W. P. Blake, in Volume XXI, Transactions American Institute of Mining Engineers, was primarily intended for the production of a salable nonmagnetic phosphate of lime product and to that end the lowest grade of iron ore containing the highest percentage of the phosphate of lime was worked. In both plants, however, the iron ore was removed magnetically and used in the reduction

works, but the nonmagnetic siliceous residue of the earlier plant was worthless and thrown away.

JOHN N. JUDSON.

New York, February 3, 1904.

### Motor Vehicles for General Use.

To the Editor: Some time since you had an article on the motor vehicle, in which you made some good points. It seems, however, there is more to say. Before the motor vehicle will be much used by people of moderate circumstances in the rural districts, by the farmer and small tradesman, the price will have to be lowered a little, say to \$400 to \$500. The present design will also have to be materially changed to one of light weight, both in motor and wagon, the whole to weigh about 600 pounds. The body should be patterned after the farmer's carryall," with the front seat well ahead and stationary, and the back one movable and removable, so that a farmer can put in his grist and go to mill and market, or a merchant can put in his wares and deliver them or go out to do small jobs, if his business is of a mechanical nature. Neither of them would want a vehicle with a cover like a milk wagon. Then should the owner desire to take his family or friends out for a ride he could put in the seat that had been taken out and accommodate from two to six persons.

If the wagon part is light it will not cost so much to build. If it is light it will not require so large a motor to propel it. If the motor is smaller it is less costly to build. If the motor is small there is less expense for fuel and oil, and some motors are very successfully run air cooled. Here is more saving in several directions. If there is a less powerful motor the speed would be cut down to where it ought to be, say not over 18 miles per hour. Again, with a lighter complete vehicle and less hour speed, lighter and consequently cheaper tires can be used, which is no inconsiderable item to the not wealthy user. Further, as to the matter of speed, 18 miles per hour is as fast as the ordinary country road will permit with safety and comfort, and this speed would take one from Albany to New York in a day, which is faster than the average freight train, and half as fast as the average local passenger train. If some farmer should drive through his town at the rate of 15 miles an hour, men, women and children would rush out of doors and make all kinds of conjectures; wonder who was sick, dead or dying, or if the farmer was sane and sober.

It seems that a vehicle made along the lines noted, with the motor under the front seat or under the body, giving clear space back of the seat to give room for all the wagon could carry, and affording easy access to the rear (and making the base of stability low down), would be a popular outfit with a large class that will not buy the present designs; for the motor vehicle as now largely built is intended to meet the demand of a "fad" and not much of the practical for the practical. Some may say that a weight of 600 pounds is too light to do what has been mentioned, yet it is a fact that many farmers will hitch a team to a carryall or handy wagon that does not weigh over 400 pounds, with wheels 36 inches to 46 inches high and 11/8-inch spokes at the hub, put in four grown people and a child or two, or three or four bags of wheat, weighing 450 to 600 pounds, and let his team trot briskly, and think, with this load, he is perfectly safe, although he has used this wagon a dozen years. And he is. The low wheels of the motor vehicle are stronger than such high wagon wheels, and would stand for years, except the tires, if run at a decent and practical rate of speed, such as indicated above. manufacturer who will build something along the lines mentioned will fill a space now vacant.

A. T. VAN NOSTBAND.

ROMULUS, N. Y., February 5, 1904.

A. M. Byers & Co., Incorporated.—The charter of the well-known iron firm of A. M. Byers & Co., Incorporated, of Pittsburgh, has expired by limitation and a new corporation have been organized with a capital of \$1,500,000, and known as the A. M. Byers Company.

The officials are as follows: D. C. Byers, president; E. M. Byers, vice-president, and H. H. Richardson, secretary and treasurer. The company own a large wrought iron pipe works on the South Side, Pittsburgh, and also Mattie furnace at Girard, Ohio, which is operated under the name of Girard Iron Company.

# PERSONAL.

Frederick A. Waldron, who has held the position of superintendent of power and plant at the works of the Yale & Towne Mfg. Company, has established himself as consulting engineer at Stamford, Conn., to advise on matters relating to the construction, arrangement and equipment of new power plants, or the modernizing and enlargment of existing plants.

Harry S. Black has been elected president of the United States Realty & Construction Company, New York.

John McGeorge, consulting engineer of the Wellman-Seaver-Morgan Company, has resigned, the change to take effect March 1. He has been connected with the Wellman interests as mechanical engineer for over 13 years. After March 1 he will be located at 501 Citizens' Building, Cleveland, Ohio, having opened up an engineering office under the name of McGeorge & Sons, taking into partnership with him his sons. He expects to do general consulting business, paying particular attention to power plants and the engineering side of office buildings. Ernest McGeorge, at present with the Wellman-Seaver-Morgan Company, will resign at the same time to become a member of the new firm.

F. C. Lau, formerly superintendent of the Harrington & King Perforating Company, has established a company at 27 and 29 South Clinton street, Chicago, Ill., known as the Steel Treatment Company. Their principal business is to establish hardening plants, teach the art of scientific hardening and annealing, make microscopical examination of metals, furnish photomicrographs of the structure of steel, &c., and to harden and temper finished tools of all kinds.

Paul B. Morgan and Victor E. Edwards of the Morgan Construction Company, Worcester, Mass., are now in Europe on business connected with the contracts recently received for a continuous hoop mill for Gewerkschaft Deutscher Kaiser, Bruckhausen am Rhein, Germany, and a continuous merchant bar mill for Rheinische Stahlwerke, Meiderich, Ruhrort, Germany.

S. B. Porter, for 16 years holding various positions with the McCormick and International Harvester companies, during the past three of which as manager of the twine department of the McCormick Company before their absorption with the trust, and of the International Company since that time, has assumed the office of general manager of the Acme Harvester Company at Peorla, Ill., and, with W. H. Binnian, president of the Acme Company, will push the interests of the Peorla concern.

J. Harley Bradley, president of the David Bradley Mfg. Company, implement makers, Bradley, Ill., has been elected president of the Commercial Club, Chicago, of which club he has been a member for more than 20 years. Mr. Bradley is also a member of the Union League, Chicago, University and Illinois clubs.

Frederick W. Sivyer, president of the Northwestern Malleable Iron Company, Milwaukee, Wis., was unanimously elected president of the Merchants and Manufacturers' Association of that city at the annual meeting held on Monday, February 1. Mr. Sivyer has for several years been a director of the association.

Henry J. Pierce, vice-president of the Union Iron Works, Buffalo, N. Y., accompanied by T. E. Mitten, general manager of the International Railway Company, also of Buffalo, will sail for Europe this week to inspect electric railway lines in Antwerp and Haarlem, Holland, in which they are largely interested.

E. J. Mockford has been elected president of the Baker Gun & Forging Company, Batavia, N. Y. Mr. Mockford was for many years connected with the Johnston Harvester Company, being vice-president and superintendent

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of that company until five years ago, at which time he went to Chicago and successfully established the Advance Packing & Supply Company.

J. F. Vogel has been elected to succeed the late John Showel as president of the Gendron Wheel Company, Toledo, Ohio.

James Dalzell has sold his interest in the Alliance Brace & Tool Company, Alliance, Ohio, to David T. Thomas of Warren, Ohio.

H. M. Matthews, division freight agent of the Baltimore & Ohio Railroad, at Pittsburgh, has been appointed coal and coke agent in that city to succeed W. L. Andrews, recently resigned.

### The Lake Ore Association's Meeting.

CLEVELAND, OHIO, February 9, 1904.—A two days' session of the Ore Association was held here last week, at which the matter of prices for the ensuing year was discussed and an effort made to arrive at an agreement. It soon developed that both new and long standing difficulties made it virtually impossibly to agree now. While the various producers do not despair of eventually reaching an agreement, it is, nevertheless, apparent that if one such is reached at all it will be late. For the present the two sides to the controversy a re sparring.

It seems that the first break came over the matter of prices, and this difference arose from the diverse relations of the various members with the trade. Some of the producers consume all they mine; some of them consume a large portion of their product and have a little for the general market; others are merchant producers entirely. The producing consumer was opposed to the merchant producer in the matter of prices. The producing consumer has a larger part of his output in Bessemer old range ore, in which the consumption is becoming restricted. The consumption of that ore this year will be so light that there will be little or no call for any sales of it, the producers merely turning out what they will need for their own use. A heavy production must come from the non-Bessemer ores, with which the producers supply the foundry iron trade. The Northern stocks of this sort compete with the foundry iron producers of the East and South, and are forced to meet pretty sharp competition. The producers of non-Bessemer ores wanted a readjustment of prices which would permit the consumers to compete with the furnaces in territories outside of that which is tributary to the Lake Superior ore The Bessemer producers, however, had such a voice in the Association's affairs as to prevent any decisive action on the part of the producers of non-Bessemer ores. The producers who consume part of their output stood between these two sides of the question, being swayed by other considerations entirely than the difference separating the two main factors. These furnacemen and ore producers wanted certain concessions, which would give them a greater hold on the market. The end of it all was that a disagreement was inevitable and such as it seems impossible now to patch up.

The Bessemer old range producers wanted to hold prices where they have been during the past year, at \$4.50 as a basis. The non-Bessemer producers wanted a reduction of \$1 a ton. In fact, that side of the question wanted a general reduction of about \$1 a ton. It was not to be a horizontal cut, exactly, but one which would amount to about the same thing, the reduction in the non-Bessemer grades being commensurate to that which was proposed for the Bessemer old range.

There have been differences which have divided the members of the Ore Association for a number of years. Heretofore, in the interest of peace, many irregularities have been winked at. This year they became complicated with other situations. The demands of some individuals, who wanted a differential based on quality and also other concessions purely personal, became so urgent and so out of line with the general attitude of the members of the association that an agreement as to prices was an impossibility. The meeting of the association, therefore, differs widely from that of the meeting y year ago. At that time it agreed that no official action should be taken.

but that there should be merely an understanding as to prices, each individual announcing the prices as his own. This year there will be no such uniformity of prices, unless some action is taken later on. The disagreement leaves each producer at liberty to make such quotations as he sees fit. At that, there is hardly likely to result any war of prices such as usually follows the destruction of association agreements on the matter of prices for various commodities.

The matter of production was taken up. definite decision was reached, it is understood that there must be a restriction. It is the intention that there shall be a reduction of about 60 per cent, of the output of last year, which will bring the total up to between 14,000,000 and 15,000,000 tons for the season. It will not exceed the latter figure. The manner in which furnaces began to shut down last fall, and the light production of pig iron since, have caused an enormous amount of ore to remain upon the lake docks and furnace stock piles. The producers want this surplus worked off before trying to market any large quantities. Such a readjustment of the supply to the demand will have to come, and it is preferred that it shall come this year rather than being spread over the next two or three years. The members of the Ore Association say that they have not been getting their share of the good things out of the recent boom, and the curtailment of production now is an effort manifestly to get the association lined up to take advantage of any good times which may be ahead.

Foliansbee Brothers Company.-The new sheet and tin plate plant of Follansbee Brothers Company of Pittsburgh, which has been under erection on the West Virginia shore of the Ohio River, opposite Mingo Junction, Ohio, is nearly completed and will be placed in operation shortly. The plant contains four sheet and four black plate mills, and the product will be sold through the jobbing house of Follansbee Brothers Company, at Pittsburgh. The tin house is practically completed, and when operations are begun the present tinning plant operated by this company in Allegheny, Pa., will be dismantled. William Banfield, formerly of Wallace, Banfield & Co., who operated a four-mill tin plate plant at Irondale, Ohio, and who became one of the district managers of the American Tin Pate Company when the Irondale plant was absorbed, has been appointed manager and will operate the plant. About a year ago he resigned as district manager of the American Tin Plate-Company.

The American Shipbuilding Company, Cleveland, Ohio, have prepared plans for one of the largest and finest steel passenger steamers on the Great Lakes, to be built for the Goodrich Transportation Company, Milwaukee, Wis. The contract for the vessel has not yet been closed, but there is every probability that the order will be placed so that the vessel will be put in commission in the spring of 1905. According to the plans, the vessel will be 320 feet long, which is 37 feet longer than the "Virginia," built for the same company several years ago. Her interior and exterior finish and decorations will make her among the finest vessels afloat. She will cost about \$600,000.

The production of pig iron in Germany in 1903 was distributed as follows: Foundry iron, 1,798,773 metric tons; Bessemer pig, 446,701 metric tons; basic pig iron, 6,277,777 tons; spiegeleisen and steel iron, 703,130 tons, and mill iron, 859,253 tons. The total was 10,085,634 tons, of which 4,009,227 tons is credited to Rhenish provinces and Westphalia, 718,106 tons to the Siegen, Lahn and Hesse-Nassau districts; 753,053 tons to Silesia, 134,770 tons to Pommerania, 357,779 tons to Hanover and Brunswick, 159,403 tons to Bavaria, Wurttemberg and Thuringia; 735,968 tons to the Saar district and 3,217,328 tons to Luxemburg and Lorraine.

The National Malleable Castings Company of Sharon, Pa., have made a general reduction in wages of skilled labor of about 10 per cent.

# Trade Publications.

Power Station Specialties .- Bulletin B-62 of the George F. Blake Mfg. Company, 116 Liberty street, New York, is of medium standard size and consists of 16 pages, describing power house auxiliary machinery for boiler feeding and for condenser service The contents include rotative drive vacuum pumps and vertical cross compound and simplex power feeding pumps, Admiralty type surface condensers with compound air and circulating pumps, vertical twin air pumps, &c.

High Speed Automatic Engines.—Phænix simple and compound automatic engines, as built by the Phænix Iron Works, Meadville, Pa., are very fully illustrated and described in a 36-page pamphlet catalogue of medium standard size. This catalogue is well deserving of a place among those of the higher class, from the viewpoint of its typographical and illustrative

Turret Lathes.—The American Turret Lathe Mfg. Com-ny, Warren, Pa., have distributed three eight-page pamphlets of medium standard size, dealing with as many types and sizes of their semiautomatic turret lathes.

Centrifugal Pumping Machinery and Marine Engines.—The new general catalogue of the Lake City Engineering Company, Erie, Pa., consists of separate sheets of medium standard size, punched and bound with cord. The several sheets illustrate and describe the centrifugal pumping machinery and marine engines constituting the standard product of the

Steam Specialties.—The N. L. Hayden Mfg. Company, 172-182 West Locust street, Columbus, Ohio, in a 48-page catalogue of medium standard size set forth the peculiarities and merits of their steam specialties, including the Downing metallic packing, the Tippett piston safety valve and the Hayden relief valve for tank cars. These several devices in various forms are fully illustrated by very clear engravings.

Gas Engines.—The Hicks gas and gasoline engines, as made by the Trenton (Mich.) Mfg. Company, are briefly treated in a 16-page pamphlet of approximately medium standard size.

Power Pumps.—A 6½ x 10 inch pamphlet of 32 pages, and three small pamphlets of approximately medium standard size. The first named is Catalogue L of the Baldwinsville Centrifugal Pump Works, Syracuse, N. Y., and deals with the Van Wie power pumps and their applications to various classes of service. The smaller pamphlets are devoted to other forms of pumps as produced by the same company.

Electric Machinery and Appliances .--Bulletins Nos. 4352-4358, inclusive, from the General Electric Company, Sche nectady, N. Y. These are of the company's standard size, S x 104 nectady, N. Y. These are of the company's standard size,  $8 \times 10^{12}$  inches, and deal respectively with Type CL generators, single phase Form L motors, belt driven railway generators, motor phase Form L motors, belt driven railway generators, motor generator panels for automobile charging sets, small continuous current stationary motors, automobile motors and controllers for electric vehicles. Accompanying these is a four-page index to bulletins issued by the company. A very attractive pamphlet of popular interest is also being sent out under the title, "The Lighting of New York City." The contents consist of numerous very fine half-tone engravings giving views of interest in and about New York City, both exteriors and interiors, showing the extent to which General Electric arc lamps are used in the illumination of the country's metropolis. lumination of the country's metropolis.

Cranes.—Catalogues Nos. 14 and 15 of the Case Mfg. Company, Columbus, Ohio, are of large standard size, consisting respectively of 16 and 56 pages. The former deals principally with minor equipment and special details, while the latter is the more complete catalogue, dealing with the general construction and special features of the Case crane. Accompanying the catalogue is a price-list of power transmission machinery, in the form of a pamphlet of 136 pages, 4 x 7 inches. Bulletin No. 16, of large standard size, illustrates and describes the traveling electric lib crane recently developed by the company. tric jib crane recently developed by the company.

Electrical Machinery and Appliances.—Bulletins Nos. 1050-1052, inclusive, of the Fort Wayne (Ind.) Electric Works, are of the company's standard size, 8 x 10½ inches. The first named deals with direct connected Type M. P. L. direct current generators for power and lighting. No. 1051 gives a list of plants in the United States operating Wood single phase alternators on December 1, 1903, and No. 1052 deals with the Wood multiple alternating current street arc lighting system. Instruction books Nos. 3017 and 3018 are 4½ x 6½ inches, concerning themselves respectively with the multiple type transformer and Wood type of alternating current arc lamps

Launches and Yachts .- The Gas Engine & Power Company, and Charles L. Seabury & Co., Consolidated, New York City, are out with a 7 x 10 inch catalogue of 48 pages, illustratand describing various types of launches and yachts with different kinds of motive power.

Ladle Cars and Crane Ladles.—Catalogue of the Wm. B. Pollock Company, Youngstown, Ohio, 32 pages, 10 x 8 inches. Various types of ladle cars and crane ladles are illustrated in finely executed engravings, accompanied by general descriptive

Producer Gas for Power.—The S. R. Smythe Company, Pittsburgh, Pa., have issued an 8 x 11 inch, 16-page, pamphlet in the form of a treatise descriptive of important essentials and interesting facts pertaining to suction producer gas for power purposes. The system is that developed by Dr. Oskar Nagel, representative of the Smythe Company at 90 Wall street, New York. The producers are built in units of from 5 to 150 horsepower and are claimed to yield 1 horse-power per hour per pound of coal.

Wood Working Machinery.—The J. A. Fay & Egan Company of Cincinnati, Ohio, have issued translations of their last catalogue in the German and French languages for distribution abroad. Each is 10 x 7 inches in size and consists of 48 pages, the contents being practically the same as in the American edition, with the context and descriptive matter given in the languages named.

Annunciators and Burglar Alarms.—Bulletin No. 150 Annual An

General Machinery .- The Brandon Machine Works Company, Limited, of Brandon, Manitoba, are manufacturers of threshing machinery, stationary and traction engines and boilers, well boring machinery, fanning mills, sewing machines, &c., all of which are treated in a general way in the company's new cata-logue, 10% x 6% inches in size, 40 pages.

Elevators.-A 7% x 8 inch catalogue of 32 pages, illus trating and very briefly describing the line of elevator equipment made and installed by the Eaton & Prince Company, 70-78 Michigan Street, Chicago, Ill.

Gas Engines .-- The American-Crossley gas manufactured by the Power & Mining Machinery Company, with offices at 52 and 54 William street, New York, are accorded comprehensive treatment in a 24-page catalogue, 9 x 6% inches. The Power & Mining Company were formerly the Loomis-Pettibone Gas Machinery Company, and are successors to the Holthoff Machinery Company, whose works are at Cudahy, Wis., a suburb of Milwaukee.

Gas Engines.—A 9 x 6% inch catalogue of 40 pages describes in considerable detail the New Era gas engines, manufactured by the New Era Gas Engine Company, Second and Dale avenues, Dayton, Ohio. The Little Giant line of gas and asoline engines is given special treatment in a 12-page pamphlet 6% x 6% inches in size.

Boiler Feed Pumps.—Section 1 of catalogue No. 11 of the American Steam Pump Company, Battle Creek, Mich., 6½ x  $7\frac{1}{2}$  inches, consists of 31 pages devoted to the Marsh simplex boiler feed pumps.

Pneumatic Tools .--Sixteen pages size illustrate and describe the pneumatic tools made by the Thomas H. Dallett Company, York street and Sedgley avenue, Philadelphia, Pa.

Mine and Ore Cars. -Catalogue No. 1018 of the Atlas Car & Mfg. Company, Cleveland, Ohio, is a pretentious and attractive cloth backed pamphlet of 102 pages in medium standard size, illustrative and briefly descriptive of the Atlas line of mine and ore cars, dump cars of various types, industrial railway equipment, &c.

Fire Proof Building Material. Twenty pages of medium standard size make up the illustrated and descriptive cata-logue of Henry Maurer & Sons, 420 East Twenty-third street, New York. The contents show the construction and use of the Phœnix hollow wall construction, red clay and glass roofing tiles, and the Herculesn flat terra cotta arch.

tiles, and the Herculean flat terra cotta arch.

Engine Lathe.—The F. E. Reed Company, Worcester.

Mass., in a 5½ x 8½ inch folder illustrate and briefly describe a
24-inch special turning lathe involving several new features
designed to meet the requirements of the new high speed steels.
Accompanying the folder is a list of 201 educational institutions
using the lathes made by this company.

Air Engines and Hoists.—The Pilling Air Engine Works,
Bucyrus, Ohio, have issued several leaves in advance of the
appearance of their catalogue, illustrating the Pilling air engine
and its applications to various classes of service.

Pitch Chain.—Catalogue No. 9 of the C. O. Bartlett &

Pitch Chain.—Catalogue No. 9 of the C. O. Bartlett & Snow Company, Cleveland, Ohio, is of medium standard size and consists of 24 pages, illustrating various types of pitch chain for sale by the company, and used in connection with their line of elevating, conveying, mining and milling machinery.

Turret Machines.—The line of vertical turret machines for drilling, milling, tapping and chucking, as made by A. D. Quint, 8 Clinton street, Hartford, Conn., is fully treated in a 24-page pamphlet of medium standard size

Pumping Machinery.—The Knowles Steam Pump Works of the International Steam Pump Company, 116 Liberty street, New York, show up their entire line in a 5% x 7% inch catalogue, 137 pages.

Gasoline Engines.—The National Junior line of gasoline engines, as made by the National Engineering Company, Saginaw, Mich., is described, with numerous illustrations, in their 16-page catalogue, 6% x 6% inches in size.

Metal Planers.—The Woodward & Powell Planer Company, Worcester, Mass., have distributed a most creditable catalogue of 93 pages, in standard medium size, illustrating the company's shops and also their extensive line of metal planing machines in a wide variety.

Saw Mill.—The lumber handling machinery made by the Jeffrey Mfg. Company, Columbus, Ohio, is fully treated in the company's catalogue, 57-A, consisting of 144 pages, 5½ x 7%

Iron and Steel Products.—The Chas. G. Stevens Com-ny, 60 South Canal street, Chicago, Ill., have published a pany, 60 South Canal street, Chicago, Ill., have published a stock price-list of the various hot and cold rolled steel and iron products handled by the company. There are 100 pages, 4% x

Automobile Specialties, as made by the National Oil Burner & Equipment Company, St. Louis, Mo., are discussed in a 12-page pamphlet, 7½ x 5 inches.

Steam Packing.—Various brands of packing, as made by the Fairbanks Company, Broome and Elm streets, New York, are severally the subjects of three leaflets of approximately small standard size, and standard size, and the subjects of the subjects of small standard size, and standa Gas Engines.—The line of gas and gasoline engines for

farm use and also for general commercial purposes, as developed and manufactured by the Perkins Wind Mill Company, Misha-Ind., is described in detail, with numerous illustrations, in a 16-page pamphlet, folding to approximately small standard

Pitch Chain, as made by the Union Malleable Iron Com-ny, East Moline, Ill., is illustrated in a 14-page catalogue, pany, East Moli 9½ x 4¼ inches.

Grab Buckets .- Circular No. 77 of the Jeffrey Mfg. Com pany, Columbus, Ohio, is of small standard size, and consists of 12 pages, briefly illustrating the construction and use of the Jeffrey grab buckets, for handling materials in bulk.

Steam Hammers.—The David Bell Engineering Works, Buffalo, N. Y., in a 5% x 10% inch, 20-page catalogue, illustrate the Bell steam hammers in various forms and sizes.

Steel Sheet Piling .- The Acme pattern of steel sheet piling, made from various structural shapes, is described in a small standard size pamphlet of 14 pages by the Acme Steel Sheet Piling Company, 140 Dearborn street, Chicago, Ill.

Fans and Blowers.—Sectional catalogues of the company's standard size, 3½ x 6½ inches, have been issued by the Buffalo (N. Y.) Forge Company, dealing with type B volume blowers and exhausters, and with the company's apparatus for mechanically induced draft. Accompanying these sectional catalogues is sent out a pamphlet reporting the results of a test of the Buffalo compound engine made at Sibley College, Cornell University, Ithaca, N. Y.

Asbestos Theater Curtains.—Apropos of the current agitation on the subject, the H. W. Johns-Manville Company. 100 William street, New York, have issued a folder of small standard size relative to the use of their asbestos fire proof curtains for theaters. Inclosed within the folder are samples of the asbestos fabric, with and without wire insertion.

Artificial Stone Building Blocks .--The American Hy draulic Stone Company. 214 Century Building, Denver, Col., have developed a system of concrete blocks for use in building construction, and have issued a 52-page pamphlet, 6 x 4½ inches, showing the methods of manufacture and use of their product.

Automobile Vehicle.—The Glide Mobile, manufactured by the Bartholomew Company, Peoria, Ill., is illustrated in its various forms in a catalogue of 28 pages, 7% x 5% inches.

Gauge Cocks.—In a 20-page catalogue of medium standard size Thompson's patent gauge cocks are illustrated and described. These are the product of the Mills-Elliott Mfg. Company, Port NOTES.

The Great Lakes Engineering Works, Detroit, Mich., in their catalogue C. give an interesting history of the development of the screw propeller from its earliest stage to its present degree of perfection, as exemplified in the Great Lakes propeller wheel. The catalogue is of 16 pages, small standard size.

The catalogue is of 16 pages, small standard size.

The Shelby Steel Tube Company, Frick Building, Pittsburgh, Pa., have got out a most attractive pamphlet of 24 pages, 5½ y inches, illustrating the Shelby cold drawn steel tubing, "whence it comes; whither it goes." Illustrations of the manufacture and adaptations of this product are shown in interesting engravings, accompanied by suitable descriptive text.

The Cancos Mfg. Company, 142-146 North Second street, Philadelphia, Pa., recently sent out a novelty folder calling attention to their Black Squadron ring packing and offering to send samples of the material to interested engineers, and to secommany the sample by a valuable note book, giving data of

accompany the sample by a valuable note book, giving data of particular usefulness to operating engineers.

The Crosby Steam Gage & Valve Company, Boston, Mass.,

have just sent out a standard size folder of four pages, dealing specially with the Crosby pop safety valve.

The J. I. Case Threshing Machine Company, Racine, Wis., have sent out a neat pamphlet of 16 medium standard size pages, illustrating equipment supplied by the company and re-producing a number of testimonial letters received from satisfied users

The Mason Regulator Company, 9 Oliver street, Boston, Mass., send a four-page folder, 71/4 x 81/2 inches, calling attention to the merits of the Mason pump governor as an up to date appliance which will pay for itself within a short period of use.

Queen & Co., Incorporated, 1010 Chestnut street, Philadelphia, Pa., marked their fiftieth business anniversary by getting out a 16-page pamphiet, 7% x 10½ inches in size, and bearing the title, "Fifty Years: 1853-1903." The contents illustrate the company's works, representative items of their product, and the medals awarded at various expositions.

The Mining Engineers.—The catastrophe at Baltimore having made it impossible for the American Institute of Mining Engineers to hold its annual meeting in that city, it has been decided to meet at Atlantic City, The sessions begin on Tuesday, February 16, the headquarters being at the Hotel Brighton.

# MANUFACTURING.

Iron and Steel.

The current reports that the National Wire Corporation, New Haven, Conn., are to erect \$30,000 worth of new buildings are erroneous. The reports were inspired by the company taking out some permits to comply with the regulations of the Fire Department, and applying on buildings already completed.

Ivanhoe Furnace, Virginia, was blown out January 2.

Genesee Furnace, Charlotte, N. Y., was blown in January 23. Niagara Furnace A, North Tonawanda, N. Y., was blown out for relining January 18.

Everett Furnace, Everett, Pa., which has been idle since December, will be blown in as soon as a supply of coke can be received. The stack has been undergoing extensive repairs since it was banked. Orders have also been given by Joseph E. Thropp to start work at the Kearney Coal & Coke Works, and the limestone quarries near Ashcom. The coal mines at Kearney and the iron mines at Ferrum, W. Va., are in full operation. All departments are expected to be working full time within the next two weeks. George W. Hughes has been appointed furnace superintendent.

Lorain, Ohio, Furnace of the National Tube Company was blown in the latter part of January.

La Belle Furnace, Steubenville, Ohio, was blown in January 29.

The Glasgow Iron Company, Pottstown, Pa., have decided to rebuild their plate mill, which was destroyed by fire last ecember, replacing the burned structure with a steel building. 108 x 167 feet, and 80 feet high, contract for which has not yet been placed. No new machinery is required. At the recent annual meeting, C. B. Shoemaker was elected president; Robert Shoemaker, Jr., vice-president; Harry W. Prizer, secretary, and Oliver E. Shuler, treasurer.

The Harrisburg Pipe & Pipe Bending Company, Harrisburg, Pa., booked orders last week to the number of 150 carloads. The mills are turning out large quantities of pipe, using their new open hearth steel plant with excellent results and operating their own rolling mill.

Mill No. 2 of the Central Iron & Steel Company, Harrisburg, , resumed operations this week, after having been shut down for three weeks on account of the work of erecting a new building interfering with the operation of the mill.

After three months of idleness, the Scottdale blast furnace of Corrigan, McKinney & Co., at Scottdale, Pa., has been put in operation.

The entire plant of the American Sheet Steel Company, at Leechburg, Pa., which has been closed since Christmas, has resumed operations.

A petition in bankruptcy has been filed against the United-Wire and Nail Company, Pittsburgh, Pa.

Alice Furnace of the Youngstown Iron Sheet & Tube Company, at Sharpsville, Pa., was blown in on Monday, February 8.

The New Castle Forge & Bolt Company, manufacturers of nuts and bolts, New Castle, Pa., have decided to increase their capital stock from \$75,000 to \$300,000. Material extensions and improvements will be made to this plant, which will about treble the capacity.

Thomas Furnace of the Carnegie Steel Company 6. Of the three Ohio, was started up on Saturday, February 6. Of the three Ohio furnaces at Youngstown, two are in operation, and the Carnegied to be started about March 15. The new Thomas Furnace of the Carnegie Steel Company, at Niles. stack now building will not be completed until about May 1.

At a meeting of the Board of Directors of the Standard Tin Plate Company, Canonsburg, Pa., held last week, the following officers were elected: Joseph Underwood, president; C.S. Johnson, secretary; J. V. H. Cook, treasurer, and W. H. Richardson, general manager.

The Ohio Tube Company, recently incorporated under the laws of New Jersey, have been formed for the purpose of taking over the plant of the Eastern Tube Company, at Zanesville, Ohlo, under the plan for reorganization. The attorney company is Joseph Beall, 26 Broadway, New York City. The attorney for the

### General Machinery.

Lewis E. Bixler has withdrawn from the firm of Bixler & Sherry, machinists, Easton, Pa. Mr. Sherry will continue the business.

The Oswego Machine Works Company, Oswego, N. Y., have filed a petition for voluntary dissolution. The assets are \$18,-000, with liabilities of \$9000.

The new machine, engine and car shops of the Lehigh Valley Railroad Company, at Sayre, Pa., are being pushed to completion. The machine shop will be 750 feet in length. Plans to a power house, 120 x 240 feet, have been prepared.

It will probably be some little time before the Binghamton Railway Company, Binghamton, N. Y., are ready to purchase the equipment for their proposed new car house and repair shops, as they have not yet taken up the matter of machinery. J. P. E. Clark is general manager.

The Patterson Tool & Supply Company, Dayton, Ohio, have just received from a large machinery house in Paris, France, orders for three of their new 10-inch bench drills, while orders for lathes and other machine tools received from other sources are very gratifying.

The plant of the Eddystone Foundry & Machine Company, Eddystone, Pa., formerly the Gruson Iron Works, was sold at auction February 4 to Thomas Prosser & Sons, New York, for \$155,000. Mr. Prosser purchased the plant in the interests of the creditors. It has not yet been decided what disposition will be made of the works.

Operation of the great shops of the Rock Island Railroad, at Moline, Ill., began in a limited way with a force of 200 men February 1. This number of men will be increased to 1000 as the work accumulates and the shop is organized.

The Independence Iron Works, Lima, Ohio, have organized with John Finley, Daniel J. O'Day, C. D. Finley, Patrick H. Mack and Wm. D. O'Neill as incorporators. They are capitalized at \$50,000.

The Indiana Road Machine Company, Fort Wayne, Ind., have increased their capital stock to \$150,000.

#### Power Plant Equipment.

The New Haven Water Company, New Haven, Conn., have voted to increase their capital stock from \$2,500,000 to \$4,000,000, for the purpose of building a filtration plant and for other improvements.

The Napier Motor Company. Boston, have been incorporated under Massachusetts laws, with an authorized capital stock of \$10,000. Otto B. Cole is president and treasurer.

The Builders Iron Foundry, Providence, R. I. have completed arrangements with the d'Auria Pumping Engine Company by which they have charge of the sales of the d'Auria pumping engines, compressors and blowing engines. The company will build these engines and compressors in their shops at Providence.

The Simplex Engine Company is the name of a new Boston corporation organized under the laws of Massachusetts, with capital stock of \$20,000. Frank E. Cutler is president and Lewis G. Bartlett, treasurer.

Swazey & Smith, 53 State street, Boston, Mass., have incorporated to do a general power station supply business and for the manufacture of railway power station specialties. It is their intention to install a plant, but a location has not yet been selected. New machinery will be required, but most of it will be of a special character.

The Lake Eric Boller Works of Buffalo have become an incorporated company, with a capital stock of \$100,000. Richard Hammond is president.

The Hoosier Boiler Supply Company have been incorporated at Terre Haute, Ind., with \$20,000 capital stock. Directors: F. W. Smith, Frederick E. Rigney, Louis R. Reichmarin.

The Muncie (Ind.) Gas Engine & Supply Company have increased their capital stock from \$80,000 to \$100,000. A. L. Kitselman, president; John W. Smith, secretary.

The Gemmer Engine Company, Marion, Ind., have reorganised with \$70,000 capital stock. Directors: Philip Mather, B. F. Burk, Geo. Gemmer and others.

The village of Barberton, Ohio, is planning improvements to its water works pumping station. Bids will be received on February 22 for a boiler and a pump.

The Westinghouse Machine Company of Pittsburgh have received an order for the installation of a \$300,000 steam turbine equipment at the Government navy yard at Charlestown, Boston. The turbine and the generator will be of 1000 horse-power capacity. Three more orders of the same size are expected to follow the completion of this one. A dry dock with a capacity of 14,000,000 gallons of water is to be built there, and pamps of sufficient capacity to discharge 65,000 gallons of water a minute will be run by a Westinghouse motor of 500 horse-power capacity. The company have also received an order from Joseph Bend & Son, Olneyville, R. I., for a 500 horse-power turbo-generator, to furnish power for a large alpaca mill.

### Boilers, Engines, &c.

The Elyria Gas Engine Company, Elyria, Ohio, have been incorporated with \$100,000 capital stock by Herman Ely, E. A. Taylor, D. C. Baldwin, J. C. Hill and John Murback. They have reorganized the company of the same name and will increase the facilities of their plant, manufacturing gas engines of medium and large size.

#### Foundries.

C. H. Zehnder of Philadelphia has been appointed receiver for the Union Foundry & Machine Company, Catasauqua, Pa. The liabilities are placed at \$70,000 and assets, \$50,000.

The recently incorporated Torrance Malleable Iron Company have purchased from the receiver the plant of the Torrance Iron Company, at Troy, N. Y., and are now manufacturing malleable iron castings. The officers are: Frederick V. Griesman, president and treasurer; William E. Woollard, vice-president, and George L. French, secretary.

The Scott Foundry, at Reading, Pa., has cast and shipped a pair of crocodile shears, weighing 80,000 pounds, to the Reading Iron Company's plant, at Danville, Pa.

With the exception of a cupola and patterns a complete foundry equipment is required by the recently organized Anniston Stove Works Company, Anniston, Ala., who are to erect a \$50,000 plant. The contracts for the buildings have been let. Though it is not yet definitely decided, it is probable that the works will be operated by electricity, each machine having an independent motor. J. B. Ehrlich is treasurer and O. W. Snyder, manager.

The Maysville Foundry & Machine Company, Maysville, Ky., will build a brick addition to their plant, 60 x 75 feet. Other improvements will also be made, including the installation of a large traveling crane. The company have recently purchased a new cupola from the S. Obermayer Company, Cincinnati, Ohio.

The plant of the Youngstown Steel Casting Company, at Youngstown, Ohio, which has been idle since December, has been put in partial operation.

### Bridges and Buildings.

N. Westover & Co., Lincoln, Neb., bridge and structural iron work, are greatly increasing the capacity of their plant. Considerable new machinery has been installed, including pneumatic riveters, hammers and reaming and drilling machines.

The Nelson & Buchanan Company, Chambersburg, Pa., have been awarded contracts for the erection of a bridge at Berry's Ferry and one at Castleman's Ferry, across the Shenandoah River, in Virginia. Their bid was \$40,000 for both bridges.

The city of Providence, R. I., advertises for proposals for a new steel highway bridge over the Providence River, and for the steel superstructure for widening the bridge over the river at Exchange street. Bids will be received until Wednesday, February 17.

The Père Marquette Railroad Company will replace their present drawbridge over the St. Joseph River, at St. Joseph, Mich., with a heavier and stronger structure. The American Bridge Company have secured the contract.

T. E. Hill & Co., Chicago, have secured contract for a bridge to be built at Jackson Park, Chicago, which will cost \$35,000.

### Fires.

The shops of the Wheeling & Lake Eric Railroad, at Canton, Ohio, were destroyed by fire February 2, entailing a loss of from \$50,000 to \$75,000.

The storehouse and pattern shop of the Highland Foundry Company, Boston, Mass., were recently damaged about \$10,000 by fire, fully insured. The fire in no way interferes with the operation of the plant.

The Pratt Wire Works, Kankakee, Ill., were recently damaged \$5000 by fire.

The Cobbs & Mitchell flooring plant, at Cadillac, Mich., was damaged \$35,000 by fire, February 3.

The plant of the Peck-Williamson Heater Company, Wellston, Ohio, was destroyed by fire February 4. The loss is placed at \$60,000.

The Printz Degreasing Leather Company's plant, Philadelphia, was burned February 4. The loss is \$75,000.

The mills of the Boonton Iron & Steel Company, Boonton, N. J., were partially destroyed by fire February 1.

The Indiana Brick Works, Anderson, Ind., were destroyed by fire February 5. The loss is placed at \$50,000.

The shoe factory of William Lane & Son, Brooklyn, N. Y., was destroyed by fire February 7.

The machine shop of John Shields, near Quarryville, Pa., was destroyed by fire February 8. The loss is placed at \$5000.

The factory of the Brooklyn Chair Company, Brooklyn, N. Y., was destroyed by fire February 9. The loss is placed at \$75,000.

### Hardware.

The Waterbury Battery Company of Waterbury, Conn., have increased their capital stock from \$10,000 to \$50,000.

A corporation known as the Whitney Arms Company have practically decided to locate at Newport, R. I., where local capital has been subscribed for the purpose.

The Oakes & Dow Company of Boston, Mass., have been incorporated under Massachusetts laws, with these officers:

President, Albert T. Dow; vice-president and treasurer, George H. Oakes, and secretary, J. L. Bixby, Jr. They manufacture the Comet spark plug, at 40 Sudbury street.

The National Wagon Company, Big Rapids, Mich., have incorporated for \$20,000, with \$15,000 paid in. The following are the officers of the company: President, C. F. Karshner: vice-president, H. T. Morgan; secretary and treasurer, W. B. Roc. Work has begun in their factory, with 16 men employed.

The Glenford Fence Company, Glenford, Ohio, have been incorporated, to manufacture farm and ornamental wire fencing. The incorporators are J. D. Findley, J. A. Cooperrider, J. V. Kelly, E. E. Cooperrider and W. Johnson. Mr. Findley has been elected president and J. A. Cooperrider secretary of the company. An automatic machine for making bale ties is desired by the company.

One of the warehouses of the Bucher & Gibbs Plow Company, Canton, Ohio, was destroyed by fire a few days since, with a loss approximating \$100,000. The loss is fully covered by insurance. None of the working departments of the plant was damaged, so that these are in full operation. The company state that they are able fully to care for their trade and to fill orders without serious interruption.

The Penn Shovel Company, whose plant at Corry, Pa., was recently destroyed by fire, may possibly rebuild their works at Warren, Ohio. The company have secured an option upon the former plant of the Ohio Tube Company, and if the citizens of Warren subscribe for \$25,000 of the preferred stock the plant will be rebuilt at that place. A decision will probably be reached at an early date.

Miscellaneous.

The Edison Electric Company, Los Angeles, Cal., have purchased a site in San Pedro, where they will install a complete gas plant, with a daily capacity of 100,000 feet. While the apparatus has not yet been ordered, the company have decided upon the type that they will use.

The Hudson Belting Company, Worcester, Mass., have acquired a tract of land, 63 x 120 feet, adjacent to their present plant, and propose to build a factory of their own on the premises, though it is not yet determined if building operations will begin this season, the decision depending upon the business outlook.

The recently organized American Dressed Beef Company, Banking Trust Building, Kansas City, Kan., will operate independent stock yards and packing plants in Council Bluffs, Iowa; Leavenworth, Kan., and probably Dallas, Texas. It is the intention of the company to compete in all markets. Each plant will be erected at an expenditure of from \$250,000 to \$300,000, employing between 700 and 800 men at each location. It is probable that no equipment has as yet been purchased, as the architects have not completed plans and no details are available. Charles E. McSweeney of Kansas City is president, and William J. Thomson is secretary.

The Iroquois Iron Works, Bridgeport, Conn., have been awarded the contract for a four-story building for Burns & Co. of that city, to be used as a refining and mixing plant for oil and tar and asphalt.

Although the "Dakota," companion to the "Minnesota," which was launched from the yards of the Eastern Shipbullding Company, New London, Conn., on Saturday, February 6. will carry no sails, she requires in blocks four times the amount required for an ordinary sailing vessel. This means in weight about 20 tons of blocks. The "Minnesota" has a similar equipment. The Boston & Lockport Block Company, Boston, Mass., state that these blocks are made of a special design, the cargo blocks being constructed of steel and having a capacity of from 40 to 60 tons each. The specification calls for some of the most approved designs and patented articles now used in the highest class of marine construction. Star metaline bushed sheaves have been specified for on the cargo hoisting blocks and roller bushed sheaves for the lighter work. They also specify for the Standard automatic releasing hooks to be used for the lifeboats, these being the hooks adopted by the United States Government.

The Wisconsin Wheel Works, Racine Junction, Wis., have reorganized as the Mitchell Motor Car Works, with a capital stock of \$300,000. They will manufacture a light runabout of 7 horse-power and a touring car of 16 horse-power; also the Mitchell motor cycle.

The Kenworthy Engineering & Construction Company, Waterbury, Conn., report recent contracts, as follows: Large double end annealing furnace for the Bristol Brass Company, Bristol, Conn., chamber 8 feet 6 inches wide, 31 feet long; plate heating furnace with chamber 7 feet 6 inches wide, 30 feet long; angle or bar heating furnace, chamber 30 inches wide, 60 feet long, and brick chimney for the same, from the Fore River Ship & Engine Company, Quincy, Mass. The furnaces are all coal fired, and have incorporated in their construction some new and very valuable features, among them being cooled fronts, improved door lifts, and also improvements in the floor construction of the furnace, in order to derive the greatest possible benefit from the fuel burned.

The J. H. White Mfg. Company, manufacturers of electric, gas and combination fittings, brass goods. &c., 127-137 North

Tenth street, Brooklyn, N. Y., have incorporated with a capital stock of \$50,000. The business has been carried on for some years by J. H. White, who has now taken into the company his two sons, E. L. and F. H. White.

The Council of Ellwood City, Pa., have granted a 99-year franchise to the Ellwood City Electric Street Railway Company. The railway will connect with the New Castle and Beaver Falls lines at Hoyt Dale, 3 miles west of Ellwood City, and it is expected to be an important addition to the town as a manufacturing center.

Shafting, pulicys, &c., are about the only equipment required by William F. Simes & Son, Philadelphia, Pa., to replace that lost in the recent fire at their camphor plant. The other machinery will be repaired and put in satisfactory condition.

The Detroit Steel Cooperage Company, manufacturers of steel tanks and enameled steel cooperage, Detroit, Mich., have just completed an improvement which makes their plant 100 x 375 feet. Modern equipment has been installed. The company were organized less than a year ago by H. C. Wiedeman, and the growth of the business has been of such proportions that additional space was required to provide adequate facilities. At the annual meeting of the company, held January 25, officers were elected, as follows: Conrad Pfeiffer, president; Paul Weidner, vice-president; A. Rheinzeldt, secretary and assistant manager; H. D. Weideman, treasurer and general manager. The Board of Directors, consisting of the officers, together with Otto Rosenbush and Frederick Kahl, were re-elected. Dr. Herman Kreit was chosen a director to succeed Wm. Thiene, resigned. At this meeting the company increased their capital stock from \$100,000 to \$150,000.

The Plumbers' & Steam Fitters' Supply Company have been incorporated at Buffalo, N. Y., with a paid in capital stock of \$75,000. The directors are Joseph P. Fell, Albert K. Sage and George A. Jaffrey.

The Sterling Electric Company of Lafayette, Ind., have increased their capital stock \$100,000, to make additions and improvements to their plant.

W. J. Woolley and John Berger of the Woolley Foundry & Machine Company, Anderson, Ind., have perfected an oil burner, or converter, to supply fuel to gas engines, which has attracted, in recent tests, manufacturers from Pittsburgh, Chicago and Cincinnati, as well as from the cities and towns of Indiana.

The Garden City Tablet Company have been incorporated at Elkhart, Ind., with \$100,000 capital, to make school tablets and other paper products. The directors are: Henry F. Dayton of Chicago and W. A. Billows and G. W. Frederick of Elkhart. The plant will be a new one.

The Ansted Spring & Axle Company have incorporated at Connersville, Ind., with \$60,000 capital stock. Directors: Edward W., Geo. W. and Arthur A. Ansted.

The Automatic Cut Off Company, Gallon, Ohio, have been formed by Dr. J. H. Kochenderfer, K. B. Kring and James Power of that place. They will establish a factory in that place and will manufacture an automatic cut off device for regulating the supply of water in cisterns.

The Brew-Hatcher Company, Cleveland, Ohio, have incorporated with \$30,000 capital stock. Incorporators: W. A. Hatcher, Francis O. Brew, Morris L. Ruggles, W. A. Lines and W. D. B. Alexander. They have established a factory at Canal and Columbus streets, Cleveland, and will manufacture automobile parts of all kinds, as well as complete automobiles.

The Bruner Mfg. Company, Wapakoneta, Ohlo, have been incorporated with a capital stock of \$5000, by M. R. Bruner of Buckland and a number of prominent business men of Wapakoneta. They will establish a factory for the manufacture of farm wagons, the bodies and wheels to be made of steel.

The Bailey-Farrell Mfg. Company, Pittsburgh, jobbers in plumbers' supplies of all kinds, have increased their capital from \$350,000 to \$500,000.

The Monongahela Engineering Company have been organized with a capital of \$45,000, with offices in Lewis Block, Pittsburgh. The company will do general contracting, coal work and brick work. The officials are: Thomas M. Evans, president, and David R. Smith, secretary and treasurer. These, with Stephen W. Tener of the American Steel & Wire Company; R. H. Watson of the Homestead Works of Carnegie Steel Company, and J. M. Hoffman, constitute the Board of Directors.

The first national convention of the Citizens' Industrial Association, recently organized, will be held at Indianapolis, February 22-23, for the purpose of completing the organization. A protest will be formulated against the Anti-Junction and Eight Hour bills, and a committee will be appointed to be present at the hearings of the House Committee on Judiciary, which meets immediately after the convention.

# OBITUARY.

HARRY A. CAVNAH, president of the Canton Foundry & Machine Company, and of the Bucher & Gibbs Plow Company, as well as one of the organizers of the Structural Steel Car Company, Canton, Ohio, died January 26. Mr. Cavnah was born in Canton, June 22, 1843. After serving three years in the Civil War he went to Bourbon, Ind., where his father and brother were engaged in furniture manufacturing. In 1874 he entered the employ of the Bucher & Gibbs Plow Company as a bookkeeper, and after ten years' service became secretary of the company, later holding the positions of secretary and treasurer, general manager, until in 1902 he was made president of the company. In 1893 he founded the Canton Foundry & Machine Company, of which company he was president from the time of their organization until his death.

STEPHEN TRAUTWINE, one of the pioneer blast furnace builders of Pennsylvania, died January 17 at his home in Allentown, Pa., aged 80 years. He was born in Germany, but came to America while a youth, settling in Western Pennsylvania, where he learned the furnace building trade. He was employed by Jones & Laughlins of Pittsburgh for a number of years, but retired from active work 15 years ago.

JAMES E. PATTON, SR., president of the Patton Paint Company of Milwaukee, died suddenly of heart disease at his residence, Thursday, February 4, aged 72 years. Mr. Patton located in Milwaukee in 1855 and engaged in the paint business a year later. His plant has grown to be one of the largest of the kind in the United States.

ABRAM S. VALENTINE, a member of the iron firm of Valentine & Co., died January 7, at Bellefonte, Pa., aged 68 years.

### Fluctuations in Iron Stocks.

The following table shows the fluctuations in quotations of the stocks of iron and steel companies in the month of January, with the dates on which the highest

and lowest	prices on each stock	were re	alize	d:	
			Date.		Date.
Break Welch		Lowest.	Jan.	Highest.	Jan.
HARMY AND A	Allis Chalmers, com	7	22	8%	29
	Allis Chalmers, pref	55	8	60	8
841,233,300	Amer. Can, com	3%	6	456	27
41,233,000	Amer. Can. pref	321/4	12	371/2	25
29,000,000	Amer. Car & F'dry, com.	17%	6	21%	27
29,000,000	Amer. Car & F'dry, pref.	67	6	71	28
24,100,000	Amer. Locomotive, com.	16%	7	23	27
25,000,000	Amer. Locomotive, pref.	751/2	6	801/2	28
45,000,000	Cambria Steel	181/2	4	211/4	25
7,000,000	Cent. Foundry, com	1	20	2%	23
7,000,000	Cent. Foundry, pref	71/2	20	11%	23
17,000,000	Colorado Fuel & Iron	27%	7	. 341/2	27
25,000,000	Crucible Steel, com	. 37/4	30	4%	4
25,000,000	Crucible Steel, pref	261/4	12	31	4
	Dominion Iron & Steel	81/2	30	10	-4
4,449,800	Otis Elevator, com	26	20	27	29
6,350,000	Otis Elevator, pref	761/6	8	85	29
12,500,000	Pressed Steel, com	27	14	33	28
12,500,000	Pressed Steel, pref	69	2	7216	28
10,000,000	Railway Spring, com	21%	5	231/4	28
10,000,000	Railway Spring, pref	76	18	76%	-21
27,191,000	Rep. Iron & Steel, com.	61/2	6	8%	23
20,306,900	Rep. Iron & Steel, pref.	401/6	-4	491/2	22
7,500,000	Sloss-Shef. S. & I., com.	311/4	13	39	30
6,700,000	Sloss-Shef. S. & I., pref.	77	5	79	18
20,000,000	Tennessee Coal & Iron	35	6	41	20
510,361,300	U. S. Steel Co., com	9%	6	121/2	22
508,511,200	U. S. Steel Co., pref	54%	6	60	24
	U. S. Steel Co., new 5s.	68%	7	7516	22

Andrew Carnegie has agreed to duplicate every dollar raised for the benefit of the sufferers from the Harwick coal mine disaster, at Cheswick, Pa. Already there has been raised in Pittsburgh and other places about \$50,000. and this sum being duplicated by Mr. Carnegie will mean the raising of about \$100,000 for the sufferers, or an average of nearly \$1,000 for each family. George Westinghouse, of the Westinghouse interests, has contributed \$500 for the relief of the Harwick sufferers.

The West Virginia Bridge & Construction Company of Wheeling, W. Va., held their first annual meeting last

week and declared a dividend of 10 per cent. Edward Hazlett was elected president; George A. Laughlin, vicepresident; Charles F. Paxton, secretary and treasurer, and J. H. Barrett, general manager. Mr. Barrett for some years was connected with the Keystone Bridge Company, then affiliated with the Carnegie Steel Com-

### The American Iron & Steel Mfg. Company.

The fourth annual report, for the year ending December 31, 1903, has been issued by the American Iron & Steel Mfg. Company, Lebanon, Pa. President J. H. Sternbergh says:

In connection with our financial statement pany's business during the first half of the year 1903, with decreased demand and rapidly falling prices and unusually sharp competition during the latter part of the year. We have paid the regular quarterly dividends on our preferred stock, besides paying \$251,491.63 for renewals and maintenance of buildings and machinery, and \$262,749.29 for betterments and extensions, and in addition have absorbed the shrinkage in the value of raw materials and finished goods, in itself a large sum. It is gratifying to report that the goods we manufacture are of the highest standard, both in quality and finish, and are so recognized generally by our customers throughout the whole country.

Following is the statement of assets and liabilities as

of December 31, 1903:	
Assets.  Accounts receivable (discount, doubtful and worthless accounts written off)	\$639,618.15 191,017.40
cember 31, 1902\$124,479.33 Written off for year 1903 37,343.79  Inventory (at December 31, 1903, cost prices)	24,895.87 954,816.63
Real estate, plans and equipment  Total	\$6,383,693.21
Liabilities.	
Capital stock: Preferred\$3,000,000.00 Common1,700,000.00	\$4.700,000.00
Current liabilities (including wages to December 31, 1903) Reserve fund (to provide for depreciation) Undivided profits	939,489.00 500,000.00 244,204.12

\$6,383,693.21 The directors for 1904 are Edward Bailey, Arthur Brock, Horace Brock, Thomas Evans, C. M. Hallman, H. H. Light, James Lord, H. M. M. Richards, J. H. Sternbergh, H. M. Sternbergh and William H. Wallace. The executive officers are J. H. Sternbergh, president, Reading, Pa.; H. M. Sternbergh, vice-president and general manager, Reading; H. M. M. Richards, treasurer, Lebanon; C. M. Hallman, secretary, Lebanon; James Lord, assistant manager Lebanon plants, Lebanon. general offices are at Lebanon.

Undivided profits.....

Meteorit.-E. May, Room 10, 74 Beaver street, New York, controls the patent for this country and Canada of Walter Rubel of Germany for the manufacture of "Me-This new metal was described in The Iron Age for September 18, 1902. It is an alloy of aluminum and phosphorus, obtained by the mixture of 4 to 7 per cent. of the latter, a chemical compound being produced by a secret process. The metal has remarkable properties, which adapt it to a great variety of purposes for which copper, brass and steel are now employed. Mr. May proposes to dispose of the patent or form a company to engage in the manufacture of the metal, as may be found most desirable. It is now being manufactured abroad, on a commercial scale, and the samples exhibited are exceedingly interesting, comprising very sharp castings, fine and coarse wire, seamless tubes, thin sheets, &c.

The nineteenth annual meeting of the Illinois Society of Engineers and Surveyors was held at Champaign, Ill., January 20, 21 and 22. Officers were elected for the ensuing year, as follows: President, John W. Alvord, Chicago; vice-president, C. H. Nicolet, La Salle; secretary and treasurer, E. E. R. Tratman, Chicago. The next meeting will be held in Chicago in January, 1905.

# The Iron and Metal Trades.

Owing chiefly to the blowing in of 30 blast furnaces by the companies controlled by the United States Steel Corporation, the weekly capacity for producing Anthracite and Coke Pig Iron has jumped from 185,636 tons on January 1 to 278,319 gross tons on February 1. The January production, of course, has not reflected this somewhat violent movement, the output having been 922,-746 tons, as compared with 846,695 tons in December. It is quite evident, however, that the rate of consumption which this shows is much nearer the normal than the December figures indicated. The fact must be emphasized that there has been no such violent change in the status of the merchant furnaces, North or South, whose production has remained practically stationary. This is proven by the fact that the output of the furnaces not controlled by the large Steel companies was 419,752 tons in January, as compared with 439,965 tons in December. The stocks at the Coke and Anthracite merchant furnaces. which were 573,085 tons on February 1, as compared with 597,954 tons on January 1, show that consumption has been taking care of current output. Statistically, therefore, the merchant furnaces are in better position than they have been, and they are not at all affected. even indirectly, by the greater capacity now active in the Steel trade.

There is growing uneasiness in the Foundry Pig Iron trade, because new orders are not coming in in the volume expected. A considerable number of the Southern and Northern furnaces have been holding off because they were well taken care of for the first quarter, but they are now beginning to worry over the second quarter, for which little tonnage has been placed so far. While only a few weeks since makers were asking a premium for the second quarter, they are gradually abandoning that position now.

Our blast furnace statistics, which reflect the recovery in tonnage of the Steel trade, are encouraging in that respect. It must be noted, however, that during the days of the suspension of operations in November and December there evidently accumulated orders which are now being worked off. In nearly all cases the furnace capacity which has been started feeds the Steel works direct, and that would not have been done were there not ample assurance that the metal would be required for many months to come.

The reports from the finishing mills bring little that is new. Somewhat exaggerated ideas have obtained currency on the prospects of tonnage for Structural Material as the result of the Baltimore calamity. It will come out gradually, and will not be of a volume to affect prices. The Plate, Sheet and Bar trade note an increase in current business and a freer movement in specifications. In the Bar trade some of the large railroads are making contracts for the conversion of Scrap, and are thus getting rid of accumulations.

The Lake Ore interests had a two days' session at Cleveland last week, at which some friction developed over the question of prices for the coming season.

# A Comparison of Prices.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

At date, one week, one month and one year previous.

are date, one week, one mont				
PIG IRON:		1904.	Jan. 13, 1904.	1903.
Foundry Pig Ne. 2, Standard.				
Philadelphia	\$14.50	\$14.50	\$14.75	22.25
Foundry Pig No. 2, Southern,				
Cincinnati	12.25	12.25	12.50	21.25
Foundry Pig No. 2, Local, Chicago	13.75	14.00	14.00	23.00
Bessemer Pig, Pittsburgh	13.60	13.85	13.85	21.35
Gray Forge, Pittsburgh	12.75	12.75	12.75	20.50
Lake Superior Charcoal, Chicago	16.90	16.75	16.75	26.50
BILLETS, RAILS, &c.:				
Steel Billets, Pittsburgh	23.00	23.00	23.00	30.00
Steel Billets, Philadelphia	24.00	24.00	24.25	28.00
Steel Billets, Chicago	24.00	24.00	24.00	30.50
Wire Rods, Pittsburgh	30.00	30.00	30.00	35.50 -
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	11.00	11.00	10.00	18.00
O. Steel Rails, Philadelphia	12.50	12.75	11.50	20.75
O. Iron Rails, Chicago	16.50	16.00	13.00	24.00
O. Iron Rails, Philadelphia	15.50	15.50	16.00	23.50
O. Car Wheels, Chicago	14.00	13.50	13.00	24.00
O. Car Wheels, Philadelphia	13.00	13.00	12.75	22.75
Heavy Steel Scrap, Pittsburgh	13.75	13.00	12.50	21.00
Heavy Steel Scrap, Chicago	10.50	10.50	10.00	18.00
FINISHED IRON AND STEEL	12			
Refined Iron Bars, Philadelphia.	1.35	1.35	1.35	1.934
Common Iron Bars, Chicago	1.40	1.40	1.321/	
Common Iron Bars, Pittsburgh.	1.34%	1.29%	1.34%	1.80
Steel Bars, Tidewater	1.441/	1.441/	1.441/	1.75
Steel Bars, Pittsburgh	1.30	1.30	1.30	1.60
Tank Plates, Tidewater	1.741/	1.74%	1.74%	2.10
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater	1.74%	1.74%	1.74%	1.75
Beams, Pittsburgh	1.60	1.60	1.60	1.60
Angles, Tidewater	1.74%	1.744	1.7436	1.75
Angles, Pittsburgh	1.60	1.60	1.60	1.60
Skelp, Grooved Iron, Pittsburgh.		1.45	1.50	1.90
Skelp, Sheared Iron, Pittsburgh.	1.521/	1.524	6 1.50	1.95
Sheets, No. 27, Pittsburgh	2.15	2.15	2.20	2.65
Barb Wire, f.o.b., Pittsburgh	2.50	2.50	2.50	2.50
Wire Nails, f.o.b., Pittsburgh	1.90	1.90	1.90	1.90
Cut Nails, f.o.b., Pittsburgh	1.70	1.70	1.90	2.10
METALS:				
Copper New York	12.121/	12.25	12.75	12.75
Spelter, St. Louis	4.671/		4.70	4.85
Lead, New York	4.40	4.40	4.45	4.10
Lead. St. Louis	4.25	4.30	4.20	3.974
Tin, New York	27.95	27.50	29.25	29.20
Antimony, Hallett, New York	7.00		6.50	7.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer,		2.04	9.70	9.70
100 lbs., New York	3.04	3.04	3.79	3.79

### Chicago.

FISHER BUILDING, February 10, 1904 .- (By Telegraph.)

The most interesting developments of the week are the enforced decrease in the price of Southern Pig Iron, the newly arrived at understanding in Sheet Steel between the independents and the leading producer, the cut in the prices of Hoops, and the unloading on the market by two Western roads of an accumulated tonnage of Scrap. We have been quoting the Southern Pig Iron market for a long time at \$10 for No. 2 with the knowledge that prices were made here and there at least 25c. below that figure, but the time has come when so many producers are not getting the \$10 price that it would be misleading to continue to quote that price. Similarly Northern Iron is showing great weakness, the small demand in this market having been supplied at the time when the Northern producers reduced their price to \$14 and the Southern people reduced theirs to \$10, Birmingham. The leading independent makers of Sheets, both black and galvanized, corrugated and plain, have agreed to adhere to the prices quoted by the American Sheet & Tin Plate Company, the present prices being quoted under the Sheet Steel heading in the following article. If their committee, ordered to wait upon the American Sheet & Tin Plate Company, were able to arrive at prices quoted by that company, they were able to arrive at prices quoted by that company, they were able to do more than the average student of market conditions can do, because Sheet Steel has for a long time been sold at whatever price would take the business. It is possible; however, that now that the competition of independent makers is practically eliminated the schedule of prices named by the independents may be adhered to by both parties to the understanding. It may be said in passing that the prices are not high in comparison with other Finished Steel products, though they are higher

than current quotations have been in this market for the last few weeks

Pig Iron.—The only changes on the Pig Iron price-list are reductions, and even the prices as left might almost be said to be nominal, as business is at a standstill and no tonnage of any consequence is being placed. Northern Iron producers are holding No. 2 at \$14 in the hope of securing producers are holding No. 2 at \$14 in the hope of securing business at that price, just as the Southern producers hold at \$10, Birmingham, in the same hope. While the Southern people are slowly receding from the \$10 price the Northern producers are at least holding at \$14 for No. 2, but cutting No. 1 down to \$14.25. Ohio Strong Softeners are off about \$1 a ton. Lake Superior Charcoal is down 75c. Standard \$1 a ton. Lake Superior Charcoal is down 75c. Standard Bessemer and Southern Basic have each lost 50c. of their old price. These are certainly the lean days in Pig Iron circles, but if there were any likelihood of getting large tonnages by cutting prices there is no doubt that prices would be cut heroically; but in the absence of indications of business producers conclude that they may as well hold to prices that leave a small margin of profit for the little business that comes to them. We quote: that comes to them. We quote:

Lake Superior Charcoal\$16.00 to	\$16.50
Northern Coke Foundry, No. 1 14.25 to	14.50
Northern Coke Foundry, No. 2 13.75 to	14.00
Northern Coke Foundry, No. 3 13.25 to	13.50
Northern Scotch, No. 1	15.25
Ohio Strong Softeners, No. 1 15.30 to	15.80
Ohio Strong Softeners, No. 2 14.80 to	15.30
Southern Silvery, according to Silicon. 15.10 to	16.10
Southern Coke, No. 1	14.35
Southern Coke, No. 2	13.85
Southern Coke, No. 3	13.35
	12.85
Southern Coke, No. 1 Soft 14.10 to	14.35
Southern Coke, No. 2 Soft 13.60 to	13.85
Foundry Forge 12.60 to	12.85
Southern Gray Forge12.35 to	12.60
Southern Mottled	12.35
Alabama and Georgia Car Wheel to	19.85
Malleable Bessemer 14.50 to	15.00
Standard Bessemer	16.30
Tackwar County and Kantack Culture	10.50
Jackson County and Kentucky Silvery,	40.00
6 to 10 per cent. Silicon 17.30 to	18.80
Basic Southern 13.85 to	14.35

Bars.—Bar Iron is still held nominally at 1.40c., though there is still a good deal of Iron on the market at less than that price, offered by people who made contracts when prices were much lower than now. The leading producer of Bar Iron sales amounting to about 40,000 tons in the last four weeks, and as a large majority of the buyers covered their requirements for the next three to six months, there is their requirements for the next three to six months, there is every possibility that buying in Iron Bars will be light from now on. A feature of the Bar Iron market is the fact that railroads have placed large orders in exchange for their Scrap. Steel Bars continue to move with fair activity at 1.46½c., base, half extras. The dissolution of the pool existing between the three leading producers of Hoops has led to open competition for business at about 1.45c. rates, Pittsburgh, full extras, for No. 13, and lighter in carload shipments, and 1.50c. for less than carload lots. Heavier than No. 13 are now in the Bar class. This places Hoops in about their normal relation with Bars. From store Iron Bars are being sold at 1.60c. to 1.75c., full extras, and Steel Bars are being sold at 1.60c. to 1.75c., full extras, and Steel Bars at 1.60c. to 1.75c., half extras, the lower price in each case being only for business that is exceptionally desirable, and is only quoted to large customers who buy extensively from store. Steel Hoops from store are still offered at 2.10c. to 2.20c. rates, full extras.

Structural Material.—Structurals have been very quiet, both from store and mills. A number of buildings requiring from 750 to 1500 tons are being figured on, and some of these will be placed within the next ten days. We quote: I-Beams and Channels up to and including 15 inches and Angles 3 inches on one leg and larger, 1.76½c., Chicago; Tees, \$1 per ton extra. Sales of Structurals are being made at 1.95c. to 2c. cut to lengths 5 feet and over, with here and there sales made at 1.90c. to large buyers.

Plates .- The Plate market is quiet, with every indica-Plates.—The Plate market is quiet, with every indication pointing to the fact that buyers are only ordering what they absolutely must have. We quote as follows: Tank Steel, ¼-inch and heavier, 1.76½c. to 1.86½c.; Flange, 1.86½c. to 1.96½c.; Marine, 1.96½c. to 2.06½c.; Universal Mill Plates, 1.76½c. to 1.86½c. From store Plates are selling at 2c. for Tank quality, ¼-inch and heavier; 2.10c. for 3-16; 2.15c. for No. 8; 2.20c. for No. 10, with 25c. per 100 lbs for Flange quality. lbs. for Flange quality.

Sheets.—The agreement between independent Sheet mills and the American Sheet & Tin Plate Company has crystallized Sheet prices, so that for the first time in many crystallized Sheet prices, so that for the first time in many days it is possible to quote with a degree of accuracy. The new prices are as follows: For one-pass Cold Rolled Sheets and one-pass Blue Annealed Sheets: No. 10, 2.01½c.; No. 12, 2.06½c.; No. 14, 2.11½c.; Nos. 16 and 17, 2.16½c.; Nos. 18 to 21, 2.21½c.; Nos. 22 to 24, 2.26½c.; Nos. 25 and 26, 2.31½c.; No. 27, 2.36½c.; No. 28, 2.46½c.; No. 29, 2.76½c.; No. 30, 2.86½c. All in carload lots, f.o.b. Chicago, with 5c. per 100 lbs. extra for less than carload shipments at the mill and 3½c. higher freight on less than carloads, making 8½c. premium at Chicago for less than carloads in addition to the above prices. While the prices named for

Black Sheets are supposed to be those of the leading producer, No. 16 gauge has been sold within the last week in this market at \$3 per ton less than prices named. From store Blue Annealed Sheets are being sold at the following prices: Nos. 8 and 10, 2.15c. to 2.20c.; No. 12, 2.20c. to 2.25c.; No. 14, 2.30c. to 2.25c.; No. 16, 2.40c. to 2.45c.; Nos. 18 and 20, 2.50c. to 2.55c.; Nos. 22 and 24, 2.55c. to 2.60c.; No. 26, 2.65c. to 2.70c.; No. 27, 2.75c. to 2.80c.; No. 28, 2.80c. to 2.85c.; No. 29, 2.95c. to 3c.; No. 30, 3.10c. to 3.15c. Galvanized Sheets have also been fixed in price by the independent manufacturers, as follows: Nos. 16 and by the independent manufacturers, as follows: Nos. 16 and 17, 2.56½c.; Nos. 18 to 21, 2.71½c.; Nos. 22 to 24, 2.86½c.; Nos. 25 and 26, 3.06½c.; No. 27, 3.26½c.; No. 28, 3.46½c.; No. 29, 3.86½c.; No. 30, 4.26½c. These prices are about equivalent to 80 and 2½ per cent. discount, Pittsburgh, except in the heaviest gauges, where the new price equals 80 and 7½ on the No. 17 and about 80 on the No. 16. For less than carloads a premium of 5c. is charged at the mill, making it 8½c. per 100 lbs. higher than carloads, Chicago, if sold at less than the carload rate. Eaves Trough and Conductor Stock, 11½-oz. weight, or, in other words, No. 29 gauge, has been fixed at \$3.50 per 100 lbs., Pittsburgh, or \$3.66½, Chicago, in carload lots. Prices on Roofing also have been fixed by the independent manufacturers, as follows, in carload lots, f.o.b. Pittsburgh. In order to determine the delivered price, Chicago, it is necessary to reduce the price per square to the basis of weight and add 16½c. per 100 lbs. for freight from Pittsburgh to Chicago in carload lots. The following prices have been fixed for 2½-inch corrugations:

Number																									P		Galvanized. Per square.
28	0			0	0				۰	۰				0	0	0					0					\$1.75	\$2.85
27																					٠					1.85	2.90
26		Ī				Ī																				2.00	2.95
																											3.40
22																											4.15
120	٥	*	0	0	0	۰	a	5	D	a		0	0	0	0	0		0	٠	۰	۰	0		0	۰	0.00	4.65
.20					0	•	0												œ		9						4.00
18					0												٠							D		5.00	6.05
16				0												0		0								6.10	7.05

A rebate of 5 per cent. is indicated on the Painted Sheets only.

Billets.—There has been very little business done in Billets, and what sales have been made have been on the basis of \$24, Chicago, for carload lots of either Forging or Rolling Billets, Bessemer or Open Hearth.

Cast Iron Pipe.—No changes are reported in the prices of Cast Iron Pipe, and the leading producer states that business has improved somewhat since a week ago. Several fair topped have been call to the prices. business has improved somewhat since a week ago. Several fair tonnages have been sold to gas plants, among them 1000 tons to East St. Louis, Ill., and about the same quantity to St. Paul, Minn. We quote: 4-inch Water Pipe, \$27 per gross ton, in carload lots, Chicago; 6 to 12 inch Water Pipe, \$26 per ton; Pipe larger than 12-inch, \$25 per ton; Gas Pipe, \$1 per ton higher.

Merchant Pipe.—The largest Pipe interest here states that the changes in prices noted last week have rather stimulated buying, as they have called the attention of Pipe users to their own stocks and led to the compilaion of orders intended to bring stocks up to date. We repeat dis-counts quoted by this producer, as follows, f.o.b. Chicago, in carload lots:

				r'ght Iron	1
	Black.	Galv.	Black. Per cent.		
1/4 to 3/4 inch	67.35	57.35	64.35	54.35	
inch	70.35	60.35 $64.35$	67.35 $71.35$	57.35 61.35	
% inch	69.35	59.35	66.35	56.35	
Less than carloads	s, 12½ I	per cent.	advance.		

Boiler Tubes.—Business in Boiler Tubes continues to be taken at about an even gait, which is not quite as rapid as the sellers would like to see. The leading producer names the following discounts in carload lots from mill, f.o.b. Chi-

1 to 114 inches		Iron, 38.85 37.35	Seamless steel. 53,35 40,35
2½ inches	57.45	42.35 1	up to 4 in.
2% to 5 inches	63.35	49.85	48.35

There has been no change made in the discounts on Boiler Tubes from Chicago jobbers' stock, which are as follows:

1 to 11/4 inches	teel. Iron. Seamless 40 35 37½ 50 32½ 35
24 to 5 inches	60 45 45
6 inches and larger	50 3214

Merchant Steel.—This has been rather a quiet week in Merchant Steel, and prices remain as follows: Open Hearth Spring Steel to the general trade, 2c. to 2.25c.; Smooth Fin-Spring Steel to the general trade, 2c. to 2.25c.; Smooth Finished Machinery Steel, 1.71½c. to 1.81½c.; Smooth Finished Tire, 1.66½c. to 1.76½c.; Sleigh Shoe, 1.51½c. to 1.61½c.; Cutter Shoe, 2.25c. to 2.35c.; Toe Calk Steel, 2.01½c. to 2.11½c.; Crucible Tool Steel, 6½c. to 8c.; Special Tool Steel, 12c. up; Shafting at 52 per cent. in car lots and 47 per cent. in less than car lots.

Rails and Track Supplies.—No noteworthy orders have been taken in the Chicago market for Standard Section

Rails, although there are quite a number of deals under way for tonnages of considerable moment. We quote a base price of \$28 per ton for 500-ton lots, f.o.b. Chicago, for Standard Section Rails. Light Rails are being sold as low as \$23, maker's mill; but the fact that these prices are quoted by mills far in the East brings the price to the neighborhood of \$25, Chicago, on a competitive basis. Track Supplies are still quoted as follows: Angle Bars are being sold at 1.40c. to 1.50c.; Spikes at 1.70c. to 1.80c., base, and Track Bolts at 2.50c. to 2.60c., base.

Old Materials.—This is one of the most interesting lines of Iron merchandise at the present time, as it indicates not only the condition of Iron and Steel mills, but also the buying and selling attitude of railroads. Summed up, the situation seems to be that purchasing agents of all the leading railroads have been given rigid instructions by their superiors not to sell a pound of Scrap materials unless they could secure a premium, and to buy as little as possible of Finished Materials, both buying and selling orders of any moment to be referred personally to the president or the general manager of the road. The effort on the part of the railroads seems to be to make their Old Materials pull the chestnuts out of the fire for them. These are the days when the railroads have not much money to spend and when they find it difficult to market the bonds to get more money. Their Scrap is therefore used on an exchange basis in the buying of their Iron and Steel supplies. The Chicago & Northwestern Railway, which had been holding its Scrap for some months, unloaded about 4000 tons last Saturday. The Chicago, Milwaukee & St. Paul road disposed of a somewhat similar tonnage. Just what proportion of Bars and other Iron and Steel supplies the roads took in exchange for their Scrap is not ascertainable, but it is safe to guess that the Old Materials were used to the best possible advantage in covering their needs in Finished Materials to avoid spending cash. It is estimated that the Old Materials sold by these two roads have supplied the leading consumers of Melting Scrap for the next three months. A lot of 1700 tons of Rails was sold to a local mill, and that purchase will keep that mill out of the Old Rail market for a long time. With all the leading buyers covered both with Rails and general lines of Melting Scrap it is hard to say where a market can be found for the large amounts of Old Materials stored up by the railroads and in dealers' yards. This been the condition for some time, and in spite of the fact that the supp

Old Iron Rails	13.50
Old Steel Rails, less than 4 feet 11.00 to Heavy Relaying Rails, subject to in-	11.50
spection	24.00
	$20.00 \\ 14.50$
Heavy Melting Steel Scrap 10.50 to	11.00 10.00

The following quotations are per net ton:

•	tonowing quotations are per	Her co	ALA .	
	Iron Fish Plates		. \$13.00	to \$13.50
	Iron Car Axles		16.50	to 17.00
	Steel Car Axles		. 14.00	to 14.50
	No. 1 Railroad Wrought		. 12.50	to 13.00
	No. 2 Railroad Wrought		11.50	to 12.00
	Shafting		13.00	to 13.50
	No. 1 Dealers' Forge		. 9.50	to 10.00
	No. 1 Busheling and Wrought F	Pipe	9.00	to 9.50
	Iron Axle Turnings			to 8.50
	Soft Steel Axle Turnings		. 8.00	to 8.50
	Machine Shop Turnings		7.50	to 7.75
	Cast Borings		. 4.00	to 4.50
	Mixed Borings, &c		. 4.00	to 4.50
	No. 1 Boilers, cut		. 8.50	to 9.00
	Heavy Cast Scrap			to 11.50
	Stove Plate and Light Cast Sc			to 10.00
	Railroad Malleable		9.50	to 10.00
	Agricultural Malleable		. 9.00	to 9.50

per Bottoms, 10½c.; Copper Clips, 10%c.; Red Brass, 10%c.; Red Brass Borings, 5½c.; Yellow Brass, heavy, 8½c.; Yellow Brass Borings, 6½c.; Light Brass, 6c.; Heavy Lead, 4.25c.; Tea Lead, 3.85c.; Zinc, 3%c.; Block Tin Pipe, 24c.; Pewter, No. 1, 19c.

Tin Plate.—Business continues good in Tin Plate at the recently reduced price of \$3.64 per 100-lb. box of 14 x 20 prime Bessemer Coke Tin, f.o.b. Chicago, in car lots.

Coke.—No change in the price of Coke has become manifest in the Chicago market, the range being from \$2 to \$2.25 for Connellsville 72-hour Foundry Coke, or \$4.65 to \$4.90, Chicago, in carload lots.

# Philadelphia.

FORREST BUILDING, February 9, 1904.

Business has not improved as regards the demand for Iron and Steel. There are some indications of better conditions, but they are counteracted by others that are less favorable. The real test of the situation is the "going" prices, and they are certainly not any better. Nominally they are unchanged; as a matter of fact, they are lower. The demand is very light, however, and while last week's prices may be obtained for small lots, large orders could be placed on easier terms. But there is no general demand for large lots, and attempts to secure such business would only weaken prices without increasing the tonnage. Once in a while there is an inquiry for a good sized lot, but it usually results in a postponement of the order or a cutting down to one-half, or less than one-half, of the quantity named in the original inquiry. Hopes based on inquiries have, therefore, been so seldom realized that the feeling has become general that there will be no important buying unless at prices lower than those now ruling. The situation is so sensitive, however, that buyers are as afraid to bid as sellers are to offer, apart from naming the usual quotations; but there is a good deal of anxiety to secure business, and if dealers manifested a disposition to place orders they would not have to wait very long for a cut price. It is argued that on the present basis of cost prices cannot go any lower, but all the same pig iron could be bought lower if the right kind of bids were made. It is an open secret that Southern Iron, which was officially quoted at \$10.50, f.o.b. cars, for the second quarter of 1904, can now be had at \$10, and that the \$10 quotation for the first quarter can be shaded 25c.—possibly more than that. But there is no demand of any account, so that the question of price is not much of a factor at the present time. The demand for finished products is relatively better than that for Pig Iron. Bar Iron is considerably better, and in other lines increased activity may be noted, although prices are by no means what could

Pig Iron.—In some quarters there is a strong disposition to talk things up, but as a matter of fact the feeling is very despondent. The demand does not increase as it ought, and as it no doubt would if conditions were right, and a good deal of apprehension is felt in regard to the outcome. Business must be better or worse in the near future, as things cannot drag along as they have been doing for several months past. Prospects for betterment are not distinctly favorable, although there is a possibility that the turn may be in that direction. The two important events of the week have been the great fire in Baltimore and the practical outbreak of war between Japan and Russia. The first great effect following these happenings will be disturbance in the money markets of the entire world, which may eventually paralyze the industrial situation. The other possibility is that it may cause such a demand for American products as to tide us completely over calamities such as mentioned. It is impossible at this time to estimate these matters with certainty, but that they will have an important influence is certain, but to what extent and in what direction time alone can show. At the present time, however, the demand for Pig Iron is only moderate and prices are not strong. A little more demand might make them strong, while a little less would undoubtedly lead to lower prices. The tendency is slightly in that direction at the present time, more particularly as regards Southern Irons; but, as we said before, the turn could easily be made if a few good sized orders came on the market. In other words, prices depend entirely on the character and the extent of the demand, but better or worse it certainly will be within a very brief space of time. At present, the range of asking prices is about as follows for Philadelphia and nearby deliveries:

No. 1 X	Foundry.			 \$	\$15.50 to \$16.00
No 2 X	Foundry.			 	14.au to 15.00
No. 2 Pl	ain	-hi-		 	14.00 to 14.25 13.75 to 14.00
Southern	No. 2 ran No. 2, on	gock	пент	 	13.00 to 13.50
Standard	Grav Kore	70		 	13.50 to 14.00
Ordinary	Grav Fors	ze		 	12.75 to 15.25
Basic				 	13.65 to 13.85

There is a good demand for Steel, not in particularly large lots, but everybody sems to want a little of something. Prices are steady at \$24 to \$25, delivered, varying according to what may be required and at what time. Prospects in this department are considered to be very good, as there is a considerable amount of business in sight, chiefly, however, from small consumers.

Plates.-There is a better demand for Plates, and most of the mills are increasing their output. Orders have been taken from bridge builders, ship builders, locomotive builders, and in almost all lines there seems to be more business under way. The lots are not notably heavy, but the aggregate is very encouraging. Prices unchanged, as follows:

0.1.	Part
	ds. carloads.
Cent	
Tank Steel, 1/4 inch and heavier 1.73	1.781/4
Tank Steel, 3-16 inch	1.881/6
Tank Steel Nos 7 and 8 B W G 1.88	1.9316
Tank Steel, Nos. 7 and 8, B. W. G	2 0312
Elemen of Poller Steel 199	1 991
Flange of Boller Steel	1,0072
Commercial Fire Box Steel. 1.93 Still Bottom Steel. 2.03	1.98/2
Still Bottom Steel2.03	3/2 2.08/2
Locomotive Fire Box Steel2.23	1/2 2.28/2
Plates over 100 to 110 inches	per lb. extra
Plates over 110 to 115 inches	- 11
Plates over 115 to 120 inches	4.6
Plates over 120 to 125 inches	44
Plates over 125 to 130 inches50	
Plates over 130 inches1.00	
All sketches (excepting straight taper	
plates varying not more than 4 inches	
in width at ends, narrowest end be-	
ing not less than 30 inches)	
Complete Circles	66
Shell grade of Steel abandoned.	

Structural Material.—Manufacturers appear to be pretty well satisfied with the situation. They are not getting as much business as they could handle, but they are running along comfortably and under somewhat easy conditions. They are getting their supplies on a lower basis of costs, and claim to be doing as well as when there was a larger volume of business. Prospects are fairly good for the spring and summer business, and prices unchanged as follows: Beams, Channels and Angles, 1.73½c. to 1.85c., according to specification, and small Angles, 1.50c. to 1.55c.

Bars.—The volume of business is fairly maintained, and est Refined Bar Iron is held at firm prices, say, 1.35c. to foc., delivered, for carload lots and upward. Ordinary 1.40c., delivered, for carload lots and upward. Ordinary qualities can be had at about 1.30c., perhaps less, but dependable qualities command full prices. Steel Bars are steady at unchanged prices, with a moderately good demand.

Sheets.—The demand is very good, better than it has en for a long time, and mills are fully employed, with a continuance of inquiries which indicate a good deal of business in the near future. Prices are firm, with an encouraging

Old Material.—Scrap of all kinds is a trifle easier, although it is not quotably lower. The great fire in Baltimore will increase the supply considerably, in anticipation of which buyers are disposed to purchase sparingly. Bids and offers are about as follows:

Old Steel Rails	\$13.00 12.75
Low Phosphorus Scrap, nominal 16.00 to	17.00
Old Steel Axles 16.00 to	17.00
Old Iron Rails 15.00 to	16.00
Old Iron Axles 18.00 to	19.00
Old Car Wheels 12.00 to	13.50
Choice Scrap, R. R. No. 1 Wrought 15.50 to	16.50
Country Scrap 13.75 to	14.25
Machinery Scrap 12.75 to	13.25
No. 2 Light Scrap	11.50
No. 2 Light (Ordinary) 9.00 to	9.50
Wrought Turnings 9.00 to	9.50
Wrought Turnings, Choice Heavy 10.00 to	10.50
Cast Borings 7.00 to	7.50
Stove Plate 11.00 to	11.50
Wrought Iron Pipe 11.50 to	12.00

# Cleveland.

CLEVELAND, OHIO, February 9, 1904. Iron Ore.—The decision of the Ore Association to limit this year's production to 15,000,000 tons as a maximum does not promise very well for boat earnings for the comat that boat earnings were not good, the freight market being constantly weak. It is evident that there will be no hurry on the part of either side to arrange for the shipment of Ore down the lakes this year, either by charters for the season or for single trips. The vast overplus of tonnage on the lakes, now lying idle, will hardly get started until June, with the present outlook staring their owners in the

Pig Iron.-The Pig Iron situation has changed very lit-

tle. The spot demand for Foundry seems to have picked up some, but at best it has been uneven. The demand has varied as to quantity, some orders running as high as 500 tons, while others have ranged down to car lots and 50 tons. There is some inquiry for first half delivery, and a few inquiries which might possibly demand material for the contracting has not been the coming nine months, but the contracting has not been heavy. There has not been any demand for Bessemer or heavy. There has not been any demand for Bessener or Basic, and the Bessemer Association expects the marketing of a very little, if any, Bessemer Pig Iron for some time. The Coke situation has been very much stronger of late, the demand having increased, and prices holding pretty firm. The market is represented by a quotation of \$2.25 to \$2.50 for good 72-hour Foundry Coke, at the oven, and of \$2.10 to \$2.15 at the oven for High Sulphur Cokes. The prices of Pig Iron are quoted for hears Claysland, as follows: Pig Iron are quoted, f.o.b. cars Cleveland, as follows:

Northern Cok						
Northern Coh	e. No. 2	Foundry	y	 . 13.5	o to	14.00
Northern Col	e. No. 3	Foundry	y	 . 13.0	to to	13.25
Southern Col	e. No. 1	Foundry	y	 . 14.2	5 to	14.50
Southern Col	re. No. 2	Foundr	y	 . 13.7	5 to	14.00
Southern Cok	e, No. 1	Soft		 . 14.2	5 to	14.50
Southern Col	re, No. 2	Soft		 . 13.7	5 to	14.00
Jackson Cour	aty, 8 pe	er cent. s	ilicon	 	. to	16.95
Hangling Ro						
Southern Ch	arcoal, l	No. 1		 . 20.0	00 to	20.50
Lake Superio	r Charc	oal		 . 16.	50 to	17.00

Finished Iron and Steel.—The association among the smaller Sheet manufacturers does not seem to have been that complete success which was anticipated. Some of them, having a considerable productive capacity, have refused to join in the general movement, with the result that any tight agreement among the independents is impossible. Even without this harmony of action the market is stronger. Some on the individual account, and other in unison, have decided to stand out for higher prices, steadying the trade considerably. The larger mills are, therefore, getting a little more business, and less talk is being heard of cuts in prices to get tonnage. Prices are as quoted heretofore—namely, 2.50c. for No. 27 Black Sheets out of stock, as a basis; 2.35c. for No. 27, one pass cold rolled, in car lots, at the mill; 75, 10 and 2½ off list for Galvanized Sheets of No. 22 and lighter, while heavier gauges are quoted 75 and 10 off list. The steady demand from the agricultural works for Steel Bars has been the one good influence in the whole trade. A few contracts are finding their way on the market. Prices continue at 1.30c. for Bessemer, Pittsburgh, and 1.40c. for Open Hearth, Pittsburgh. The gradual increase in the price of Scrap and the stiffening of the cost of production have forced Bar Iron prices up a little. The bottom is now 1.30c., Youngstown, with some orders bringing 1.35c., Youngstown. An effort has been made to sell Structural Shapes, but without any appreciable results. The market has been firm and a few inquiries have come in, but consumers are not picking up any large amounts. On specifications they are inclined to repudiate existing contracts and turn their orders into a direction from which some advantage comes in the way of prices. No open cuts have been heard of, the price holding at 1.60c., Pittsburgh. The Plate trade has been dull and listless. The price remains 1.60c. Pittsburgh Pittsburgh

Old Material.—The market is inclined to dullness, but prices have held comparatively steady on the basis quoted a week ago. We continue to quote, all gross tons. Old Steel Rails, \$14 to \$15; Old Iron Rails. \$15 to \$16; Old Car Wheels. \$13.50 to \$14.50; Railroad Malleable, \$11.50 to \$12.50; Heavy Melting Steel, \$11 to \$12; Cast Borings, \$5. All net tons: No. 1 Reilroad Wrought, \$11.50 to \$12.50; No. 1 Busheling, \$10 to \$11; Wrought Turnings, \$6.50 to \$7.50; Iron Car Axles (Nominal), \$17 to \$18; No. 1 Cast Scrap, \$11 to \$12; Stove Plate, \$9 to \$10.

# Birmingham.

### BIRMINGHAM, ALA., February 8, 1904.

If the actual transactions concluded are any criterion of the market, it must be reported for the past week as dead dull and destitute of any special feature whatever. There were few orders that ran up to 500 tons, but the majority of them were less than that amount. There was a very great lack of interest in the market on the part of buyers, al-though there were a few inquiries as to prices for the second though there were a few inquiries as to prices for the second quarter. Part of the business done was for that delivery, but the aggregate was light. At the close of the week there were some negotiations going on for that delivery, but only for moderate size lots. The price at which transactions were concluded is very difficult to obtain. It is admitted that few sales were made on the basis of \$10 for No. 2 Foundry, and while it cannot at this writing be proved, the prima facis evidence leads to the inference that orders were worked on at least a basis of \$9.75, and it is quietly whispered that some went at \$9.50, basis. The major part of the business was the usual mail order contingent which has characterized the business of late. There was very manifest There was very manifest a feeling of nervousness on the part of sellers, and no one felt inclined to say anything that would tend to the injury of the market. Therefore when price concessions were made

they became a sealed book. The most of the business was for prompt and nearby delivery and for lots ranging from 100 to 200 and 300 tons. The price for this delivery ranged all the way from \$10 for No. 2 Foundry to \$9.75 and \$9.65 and \$9.50. One feature that needs explanation is the fact that while it is accepted that as low as \$9.50 was worked during the past week, an order at \$9.75 went begging and could not be placed. A local firm failed to secure Iron, although they bid this price. The largest sale reported at \$9.75 was for 500 tons. There were a few sales of Gray Forge at \$8.75 and a few sales at \$8.50, but in no case was the total of any significance. In fact, the market was the most limited we have had for some time, and speculation is rife as to the reason therefor. One cause given has been the weather, but that don't hold good now. Another reason given is the statement that the Foundry trade is averaging not more than one-third time in the shops. Whatever the reason for it, the fact is prominent that the Iron market One feature that needs explanation is the fact the reason for it, the fact is prominent that the Iron market is dead dull, and confined to very narrow limits.

Is dead dull, and confined to very narrow limits.

We are in very good condition to meet this state of affairs, as the current output is about all we have to market. Shipments of the heavy sales made toward the close of the past year have not yet been concluded and won't be for some time to come. A few of our furnaces are in such an independent position because of this state of affairs that the prevailing dullness does not worry them. Those whose policy is to avoid any piling of iron are the ones who are weak kneed.

As to the progress of the furnaces toward a combination.

As to the progress of the furnaces toward a combination, can only be said that nothing has yet been done. Thompson of the Republic Company was detained by sickness in his family, but is to be here to-day to start the machinery moving. Nothing can be added so far to what has already been stated concerning the move. It has developed already been stated concerning the move. It has developed in some quarters a close scrutiny of cost sheets for making Iron and a resurrection of the resources of various interests that circumstances may render it desirable to have in convenient reach. There would be no trouble to form a combination, but unless it can control both output and price, the object would not be attained, and the selection of interests to form it would necessarily be limited to those whose cost sheets and resources would make them desirable acquisitions. The belief here as to the successful formation of the combine is not great. This brings up the question of the cost of making Iron in this district. To those favorably situated the cost varies from \$8 to \$8.50. In getting at the cost fixed charges, repairs, relining, royalties and everything that can be charged up to Iron is included. And even with all these charges added there is one, and even two, interests which are credited with cost sheets showing less than these figures. Furnace interests so situated are not going into a combina-tion where they will have to hold an umbrella over the less fortunate brethren in the business. These figures are not hearsay figures, but come from statements made up for the management, and can be relied upon as perfectly safe. It is a difficult matter to substantiate them.

The Miners' Committee for the examination of the sales

of Iron during the month of January found that the average price was over \$8 and under \$9. There is therefore no change in their wages, and the minimum price of 47.5 cents will prevail. This report shows that the majority of the sales were of the lower grades. They were anticipating an incorporation the wages could

increase in the wage scale.

The Pipe works continue to report a very fine business, and on some of the sizes there have been some withdrawals from the market, as capacity has been engaged. There has been, and there exists yet, rather a keen competition between leading interests, and the close figures are beyond reach. For sizes \$20 is quoted, while sizes from 6-inch up are quoted at \$22 to \$23. These figures are mean only for an approximate guide. They are so governed by circum-stances that each deal is independent of the prices that may be made for any other deal.

# Pittsburgh.

PARK BUILDING, February 10, 1904.—(By Telegraph.)

Pig Iron.—There is more liberal buying of Foundry Iron and a good deal of tonnage has been placed in the past Northern brands of Soft No. 2 Iron for delivery within the next two or three months are held at about \$12.50, Valley furnace, or \$13.35, Pittsburgh. No Southern Foundry Iron is now coming into this market. A moderate amount of Bessemer is changing hands, but mostly in small lots for prompt delivery. Standard Bessemer Iron is held at \$12.75 to \$13, Valley furnace, equal to \$13.60 and \$13.85, Pittsburgh. The market on Forge Iron is quiet, and Northern brands are held at about \$12.75, Pittsburgh. The output of Pig Iron in January will show an increase over December. On February 1 the United States Steel Corpora-tion had about 70 per cent. of their blast furnaces in operation, but on March 1 it is expected that 80 per cent. or more of their blast furnace capacity will be active.

Steel .- The Steel trade is more active, in the direction that shipments from the mills on contracts are larger than for some time. This is particularly true of the finishing mills of allied interests of the Steel Corporation, Steel for which is furnished by the Steel Corporation. Sales of Bessemer Billets and Sheet Bars are being made at regular pool prices, but on Open Hearth Billets and Bars the market is not so well controlled, and prices on these are being shaded several dollars a ton or more.

Ore.-A two days' session of the Ore interests was held in Cleveland last week, but no fixed prices for Ore to be brought down this year were adopted. It is understood some friction exists among the Ore interests, particularly as regards prices for this year. Some of the Ore concerns are in favor of a reduction in prices, and this is opposed by other interests. It is estimated that the amount of Ore to be brought down this year will not exceed 15,000,000 tons, as several of the larger consumers have enough Ore on the docks to run their blast furnaces into the summer months. While nothing official has been given out, it is the impression that non-Bessemer Ores will be reduced this year about 50c. a ton, and Standard Bessemer Ores about

Car Shortage.-A very serious shortage in cars has deeloped in the Connellsville Coke region, and some of the leading Coke producers advise us that for several weeks they have been unable to get sufficient cars to move Coke promptly. The Pennsylvania Railroad is said to be in almost as bad shape as regards supply of cars as it was in the fall of 1902 and early last year. If this car shortage should grow worse, and it looks as though it would, we may have a repetition of the situation at the above periods, when there was a famine in supply of Coke and heavy premiums were paid for it for prompt shipments.

### (By Mail.)

The terrible fire calamity at Baltimore, resulting in the loss of upward of \$100,000,000 in property, will probably result in a heavy demand upon Pittsburgh industries for Steel and other materials to rebuild the burned portions of the stricken city. It is very probable that many of the large buildings that were burned will be rebuilt as fast as possible, and, profiting by the experience of the late fire, will be made practically fire proof, and this means a heavy consumption of Structural Steel. We are able to present a recapitulation of the condition of the individual blast furnace and those owned by the large Steel interests in the Pittsburgh, Central West and other districts on February 1, as follows:

Daily capacity. Company. Tons.		Capacity out.	Per cent. in.	Per cent. out.
United States Steel Corporation20,387	13,682	6,705	67	33
Bessemer Pig Iron Association 3,769	1,204	2,565	31.9	68.1
Republic Iron & Steel Company 925	425	500	46	54
Pennsylvania and Maryland Steel Com- panies, Clinton Iron				
Works and other con- cerns15,443	9,646	5,797	62.5	37.5
Totals 40 524	24.957	15.567	61.6	38.4

The above figures show that a very large number of blast furnaces that were idle on January 1 were blown in during January, and others are getting ready to resume blast this The blast furnace report, to be printed this week, will undoubtedly show a larger output of Pig Iron in January than in December, and in this respect the general condition is improved. At the same time, it is true that de-. mand for Pig Iron is quiet, consumers still pursuing the policy of buying in small lots from hand to mouth. Bessemer Pig Iron is nominally \$13, Valley furnace, but on a firm offer \$12.75, or perhaps lower, could be done. Some low prices are being made on Northern Foundry Iron, No. 2 being freely offered at \$12.50, Valley, and for extended delivery this price has been materially shaded. Forge Iron is quiet and is nominally \$12.75, Pittsburgh; but if any large tonnage were offering it is probable it could be bought at a

lower price. The Steel market is more active in the matter of tonnage, and shipments from the mills on contracts are larger than for some time. This is due, in part, to the fact that Wire and Wire Nail mills are very busy and are using a heavy tonnage of Steel. In Finished Iron and Steel the situation does not show much change. It will probably be only a few months until the effects of the Baltimore fire are felt in the direction of a demand for Structural Steel. Plates, Bars, Pipe, Wire and Wire Nails are quite active in demand, and the market on these products is very firm. Sheets and Tin Plates are rather quiet. The report that 88 independent Tin Plate mills were about to consolidate to protect their interests is untrue. It is a fact, however, that a movement is underway by the outside Tin Plate mills to secure, if possible, a reduction in wages from the Amalgamated Association. If this movement materializes much the same lines will be followed as the independent Sheet mills pursued in November and December, when they secured a reduction in wages of 10 per cent. The Coke trade is quite active, demand for both Furnace and Foundry Coke being heavier than for some time, but prices show no betterment. Taken as a whole, it can be stated that the Steel trade is showing betterment in some directions, and it is believed business is going to open up in a satisfactory way. There is more activity among the finishing mills than for some time, and more finished tonnage is being shipped out.

Plates.—We note a continued improvement in demand for Plates, and while no specially large contracts have been placed, the general trade are placing orders more liberally than for some time. Reports of a car shortage are cropping up, and if this is true, the railroads will undoubtedly be in the market before long for more cars. Most of the leading Plate mills in this district are running practically full, and tonnage being shipped out is heavier than for some time. We quote: Tank Plate, ¼-inch thick and up to 100 inches in width, 1.60c., at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price up to 3c. Plates more than 100 inches in width, 5c. extra per 100 lbs. Plates 3-16 inch in thickness, \$2 extra; gauge Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms net cash in 30 days.

Steel Rails.—It is stated that some good sized contracts for Steel Rails are under negotiation, and considerable tonnage is expected to be placed before this month is out. The Canadian Pacific order for 40,000 tons, taken by the Pennsylvania Steel Company, was at a very low price at mill. We quote at \$28 for Standard Sections.

Hoops and Bands.—A fair amount of tonnage is being placed, but prices on Hoops, owing to the recent termination of agreement, are more or less uneven. We quote Steel Hoops at 1.40c. to 1.45c. in carloads and Bands at 1.30c., extras as per Steel card.

Muck Bar.—The market is more active and a sale of 500 tons of Muck Bar are reported at \$25, f.o.b. Pittsburgh.

Sheets.—Published reports of an advance of \$2 a ton in price of Sheets are untrue. A number of independent mills have agreed to maintain prices of Sheets to conform to those of the leading interest, but it is understood a few of the mills are not doing so. Demand for Sheets is fairly active and prices are reasonably firm. It is believed that tonnage will soon show material improvement, as a good deal of business usually comes up at this season of the year. We quote No. 26 Black Sheets, box annealed, one pass through cold rolls, at 2.15c. to 2.20c.; No. 27, 2.20c. to 2.25c., and No. 28, 2.25c. to 2.30c., f.o.b. cars at mill. Galvanized Sheets in carload lots are quoted at 80 and 5 per cent. off at mill. In net prices this discount is equal to 2.85c. for No. 26, 3.04c. for No. 27, and 3.23c. for No. 28. Jobbers charge the usual advance over these prices for small lots from store.

Structural Material.—Nothing definite has been done regarding the South Side warehouse, and it may be several months or longer before this is placed. The great fire in Baltimore is expected to lead to a heavy demand for Structural Steel, Glass, Cement and other building materials, and a large part of this demand will probably be furnished by Pittsburgh. There is a good deal of small work being placed; but, as a rule, the Structural shops are only fairly busy. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6, 1.60c.; Zees, 1.60c.; Tees, 1.60c.; Steel Bars, 1.60c., half extras, at mill; Universal and Sheared Plates, 1.60c.

Iron and Steel Bars.—Tonnage in both Iron and Steel Bars is picking up, and shipments from the mills are heavier than for some time. Specifications on contracts are reported to be coming in better. Prices on Iron Bars are distinctly firmer, and we quote these at 1.30c., Youngstown, or 1.34%c., f.o.b. Pittsburgh. We quote Steel Bars at 1.30c., Pittsburgh, in carloads and larger lots. For quantities less than 200 lbs. and not less than 1000 lbs. the price is 1.40c., and for less than 1000 lbs. the price is 1.50c.

Railroad Spikes.—Demand is fair, and we quote at 1.70c, per 100 lbs., f.o.b. Pittsburgh.

Wire Rods.—The Rod market is more active than for some time, and several interests that ordinarily are sellers in the open market are using up their entire product in the manufacture of Nails and Wire. We quote Bessemer and Open Hearth Rods at \$30 to \$30.50, Pittsburgh. Basic Chain Rods, made from special stock, are selling at \$32 to \$32.50, maker's mill.

Spelter.—There is a moderate movement in Spelter, but prices are only fairly firm. Best grades of Western Spelter are held at about 4.70c., Pittsburgh, for prompt shipment.

Merchant Steel.—A moderate amount of new tonnage is being placed, but mostly in small lots. Prices, on the whole, are fairly firm. We quote: Tire Steel, 1.50c., base, for usual sizes; Toe Calk, 1.85c., base; Sleigh Shoe Steel, 1.45c. to 1.50c.; Open Hearth Spring, 1.90c. to 2c.; Cutter Shoes, tapered and bent, 2.25c. The above prices are for carload lots at mill, the usual differentials being charged for small lots. Tool Steel is 6c. to 8c. for ordinary grades. Prices on Shafting are firm on the basis of 52 per cent. off in carloads and 47 per cent. in less than carloads, delivered in base territory.

Skelp.—No large contracts have been placed since our last report, but the mills rolling Iron Skelp—and they are comparatively few, there being only one in the Pittsburgh district—are quite busy and have their tonnage pretty well sold up to April. Mills rolling Steel Skelp are also busy, and prices are firm. We quote Grooved Iron Skelp at 1.45c to 1.47½c. and Sheared at 1.52½c. to 1.55c., at mill. Steel Skelp can be had at slightly lower prices.

Merchant Pipe.—Our advices are that the Pipe trade is in very satisfactory condition, demand being quite heavy and the outlook very good. Some tonnage in large sizes of Pipe for gas line purposes has already been placed for delivery in summer. The outside mills have adjusted their prices to correspond with those of the leading interest, and the tone of the market is firmer than for some time. Discounts to consumers, effective February 1, are as follows:

### Merchant Pipe.

	St	eel.——	Ir	on.
	Black.	Galv.	Black.	Galv.
	Per cent.	Per cent.	Per cent.	Per cent.
1/8, 1/4 and 1/4	69	59	66	56
1/2 inch	69 72 76	62	69	59
1/8       1/4       and %          1/9       inch           3/4       to 6       inches          7       to 12       inches	76	66	73 68	63
7 to 12 inches	71	61	68	58
Extra strong, plain		~-		
ends, 1/8 to 8 inches	68	58	64	54
Double extra strong.				
plain ends, 1/6 to 8				
inches	60	50	56	46

Boiler Tubes.—Tonnage in Boiler Tubes is increasing, and the mills are entering more business than for some time. Prices are firm, and discounts to consumers in carloads are as follows:

										Ł	30	ii	le	r		7	1	S	e	8								
1%	to	21/4	inche	B .									0 1													 	Steel. 55%	Iron.
																												38
242	113	cnes				9 6																				 	98	43
64	to	3 in	ches.		0	0.8	. 0	0	0	0	0	0 1	0. 1	0 0	0			0	0	۰	0	0	0	0 1	0 0	 0	5512	501/2
2%	to	5 in	ches.			9 0																					6416	504 38

Connellsville Coke.—Demand for Foundry Coke is very active and Furnace Coke is also improving, though not to the same extent as Foundry. Out of about 28,000 ovens in the Upper and Lower Connellsville regions nearly 20,000 are active, the largest number of ovens in operation for some months. The Oliver & Snyder Steel Company have blown in 208 ovens, and the Washington Coal & Coke Company 125 at their two works. Shipments are increasing, and are heavier than at any time in the past six months. The price of strictly Connellsville Furnace Coke for prompt shipment is \$1.60 to \$1.65, at oven. Outside makes of Furnace Coke are being sold at \$1.45 to \$1.50 a ton. Strictly Connellsville 72-hour Foundry Coke is \$2.10, at oven, but in some cases as high as \$2.25 is obtained. Outside makes of Foundry Coke are selling at \$1.85 to \$2 a ton.

Iron and Steel Scrap.—There is considerable activity in the Scrap trade and prices, especially for Heavy Melting Stock, have shown a sharp advance in the past week. We note sales of about 6000 tons of Heavy Melting Scrap at \$13.75 to \$14 a ton, and note that some dealers are quoting as high as \$14.50 in gross tons. No. 1 Wrought Scrap is about \$14.50, gross tons; Rerolling Rails, \$15.50, gross tons; Steel Rails, short pieces, \$13.50 to \$14, gross tons; Machinery Cast Scrap, \$12.75 to \$13, gross tons, and Busheling Scrap, \$10.50 to \$11 in net tons.

The Pittsburgh Pipe & Iron Company, Craig and Kilbuck streets, Allegheny, Pa., dealers in Iron and Steel Scrap, will remove to their new yards at McKee's Rocks, Pittsburgh, about February 15. They will also continue to do business at their present location until about April 1, after which date their entire operations will be centered at McKee's Rocks.

# Cincinnati.

FIFTH AND MAIN STS., February 10, 1904.—(By Telegraph.)
There is absolutely nothing of importance transpiring in the general Iron market at this point, and so far as agents here are able to diagnose the situation, the same is true for the entire Western field. The amount of Pig Iron which is being sold is small in the aggregate and made up entirely of small orders, which, in time of plenty, would be termed inconsequential. The outlook presents a dull appearance and the amount of inquiries is lower than it has been for a week or two past. In regard to price, there is nothing which can be said that would be interesting. A great many Southern furnaces are holding for \$9.75 and \$10, Birmingham basis, for No. 2 Foundry, but it is admitted that these furnaces are not getting the little business that is going. Nine and a half delters is being deep bring the high delters in the saint deep bring the saint deep bring the little business that is going. half dollars is being done by a number of interests, and this is practically the basis on which most of the Southern busispacetically the basis of which most of the Southern business is going. Northern Iron is also dull on the basis of \$12.50, Hanging Rock basis, for No. 2. There are reports out that this grade of Iron has been offered to the trade for 25c. or even 50c. less, but so far as Cincinnati authorities go the lower prices cannot be verified. A large concern from one of the lake towns have been figuring with the market for some days now for a round lot of iron, this being at the present time the largest inquiry of note; but so far as can be learned they have bought no Iron, saying that they believe the price will again sink to the \$9 basis, thus making the difference between their ideas and any concessions which sellers might be willing to offer too great to be bridged over. The recent failure of a very large Dayton, Ohio, concern is one of the most absorbing things in Iron circles here at this date, to-day being largely taken up with meetings of creditors of the concern. Freight rates from Hanging Rock district to Cincinnati, \$1.15, and from Birmingham, \$2.75. We quote, f.o.b. Cincinnati, as follows:

Car Wheel and Malleable Irons.
Standard Southern Car Wheel......\$18.75 to \$19.00
Lake Superior Car Wheel and Malleable 18.75 to 19.00

Coke.—There is a little Coke selling all the time, but

Coke.—There is a little Coke selling all the time, but not in sufficient quantities to attract attention, and on the same basis of prices of a week ago. Coke men consider the situation extremely dull. We quote, at ovens, West Virginia Coke, from \$2 to \$2.25; Connellsville Coke, \$2 to \$2.25.

Plates and Bars.—All Structural Iron, as well as the heavier articles on the market, are quite dull in this territory. Bars and the lighter articles are in fair demand and selling on a steady basis. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.75c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.43c., with half extras; the same in smaller lots, 1.80c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 2c.; Sheets, 16-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; 14-gauge, in carload lots, 1.95c.; in smaller lots, 2.50c.; Steel Tire, ¾ x 3-16 and heavier, 1.63c., in carload lots carload lots.

carload lots.

Old Material.—The market is strictly without a distinguishing feature and without sufficient business transactions to designate as a market at all. Both buyers and sellers appear to be in a very nonactive state of mind. We quote dealers' buying prices, f.o.b. Cincinnati, as follows: No. 1 Wrought Railroad Scrap, \$10.50 to \$11 per net ton; No. 1 Cast Scrap, \$10 per net ton; Iron Rails, \$18 to \$14 per gross ton; Steel Rails, rolling mill lengths, \$10 per gross ton; Iron Axles, \$15 per gross ton; Car Wheels, \$11 per gross ton; Heavy Melting Scrap, \$10.50 to \$11 per gross ton; Low Phosphorus Scrap, \$11.50 to \$12 per gross ton.

The announcement is given to the public that the old firm of Thomas A. Mack & Co., dealers in Pig Iron, have nrm of Thomas A. Mack & Co., dealers in Pig Iron, have technically passed out of existence. It has been well known to the trade that for some years the business has been carried on by L. F. Water and B. A. Wallingford, Jr., and these gentlemen, believing that the time has come for putting forth their own names, the style of the firm has been changed to Water, Wallingford & Co.

The cantilever bridge crossing the Monongahela River at Pittsburgh, under erection for a year and a half by the Wabash Railroad, is expected to be connected up on Thursday, February 11. Work on the Mingo Junction bridge is being rushed and the Wabash Railroad will be able to run trains into Pittsburgh when this bridge is finished, probably in April next.

# The German Iron Market.

Essen, January 24, 1904.

The reason why I have not sent you a report for some months relative to the German Iron and Steel market has been that as a matter of fact we have not had any market. The plants, almost without exception, were supplied with work in the summer time of 1903 until well in the new year, and new contracts were not made because of the uncertainty concerning the formation of the Steel syndicate, the principal features of which were reported to you in October. What requirements did come up outside of the contracts made were covered from hand to mouth, so that the business situation was not affected by them. We have now entered the fourth week of the new year and yet the Steel Syndicate has not been completed, although the most prominent iron-masters have taken a very active interest in its behalf. It looks now as though it would take a long time before the details are perfected. The result of this is that work is now going on for the prolongation for a series of years of the Billet Syndicate and the Beam Syndicate, both of which expire. The idea is to consolidate them into one syndicate. expire. The idea is to consolidate them into one syndicate. According to present prospects there is no probability of a renewal of the syndicate for Rails, Ties, Tires and Axles, the oldest in the German industry. The German railroads, therefore, will at an early date be in the position to purchase at low prices as the result of the sharp competition which is in prospect. Since no one can count on the establishment of the Steel Syndicate, producers as well as consumers must soon abandon the position of reserve which they have been taking. In the meantime the stocks of dealers have declined very considerably, so that a pretty active business is developing even now in all branches of the German Iron and Steel industry. man Iron and Steel industry.

The contracts for Siegen and Nassau Ores have been closed for the first quarter. For the Loraine Minette they have been made to July 1, and in all cases at former prices. Spanish and Swedish Ores have been contracted for for the same period. The blast furnaces have sold their production for the first quarter of 1904, and deliveries are being made rapidly. Prices have been unchanged, the quotations being: 10 to 12 per cent. Spiegeleisen, 67 marks, and Special Mill Iron, 56 marks, per ton, f.o.b. Siegen; Basic Pig, 57.40 marks, delivered Steel works; Foundry No. 1, 66.50 marks; No. 3, 64.50 marks; Bessemer, 67 marks; Luxemburg, No. 3 Foundry, 52 marks, and Luxemburg Mill Iron, 45 marks per ton, f.o.b. furnace.

ton, f.o.b. furnace.

For Steel Billets the amount of work on hand is ample throughout, particularly since there are liberal export sales to deliver. Home consumers have covered their requirements for the first quarter at 77.50 marks for Ingots and Heavy Blooms, 82.50 marks for Blooms of ordinary sizes, 90 marks for Billets, and 92.50 marks for Slabs of Mild Basic Steel; Open Hearth Steel calling for 5 marks per ton

The Bar Iron trade is still quiet, but the market for Beams is exceptionally active for this season of the year. Bars are quoted 105 to 107 marks, f.o.b. mill, but export orders have been carried out down to 100 marks, f.o.b. shipping port. The home prices for Beams is unchanged at 105 marks, f.o.b. Burbach, but for the export trade the works frequently do not realize more than 80 to 82 marks, f.o.b.

There is very little activity in Bands, but a fair business is doing in Skelp at unsatisfactory prices. Boiler Skelp is quoted 117 to 122 marks. Iron Boiler Skelp, 157.50 marks, first quality, and 147.50 marks, second quality. Gas Skelp is quoted 125 to 128 marks.

The Wire works are unevenly supplied with contracts at prices which yield very little margin. For the home market Steel Wire Rods are quoted 112 to 115 marks, while Iron Rods are 135 marks. Wire Nails are quoted 155 to

marks per ton.

There is not much that is favorable to report from the Plate market. The Boiler shops are poorly off, so that the shipments of Boiler Plates are inadequate. In the shipbuilding market, which was most active lately, the competitor ing market, which was most active lately, the competitior of the English Plate mills must be taken into account. Rail mills are generally well supplied with work, including good export orders; but it is necessary to meet low prices, owing to the sharp competition of Belgium and England, so that export orders for Rails have been made which net less than 85 marks per ton, f.o.b. shipping port. Locomotive and car works are doing a good deal of business, and machine shops and bridge works are also reporting more work. Prices. and bridge works are also reporting more work. Prices, however, are not remunerative. The amount of orders which is coming to the Cast Iron Pipe shops is smaller than it has been for a long time.

The St. Louis branch of the Crucible Steel Company of America, of which F. Baskerfield is manager, have removed to their new warehouse, 16-18 South Tenth street. They will have much improved facilities in the new location, and will continue to carry a complete stock of their various brands and grades of fine Tool Steel, Polished Drill Rods, &c.

# New York.

NEW YORK, February 10, 1904.

Pig Iron.—The volume of business has been rather light in Foundry Iron, and the market is easier for forward delivery. We continue to quote Northern Foundry No. 1, \$15 to \$16; No. 2 Foundry, \$14.50 to \$15; No. 2 Plain, \$13.75 to \$14, and Gray Forge, \$13.25 to \$13.75, tidewater. Tennessee and Alabama brands are quoted: \$13.25 to \$13.75 for No. 2 Foundry and \$12.50 to \$13 for No. 3 Foundry. Ferromanganese is selling at \$42 to \$43, delivered.

Steel Rails.—No sales of any consequence are reported. One of the factors which tends to delay the placing of orders by some of the railroads is the dullness in and the consequent low prices prevailing in the market for Relayers, so that the roads cannot place advantageously the Old Material which they take up.

Finished Iron and Steel.—Nothing of importance has developed locally in Structural Material. Expected work is slow to develop. Building projects are being deferred. Contractors in a position to take outside work are preparing to compete for business in the rebuilding of Baltimore. The Steel frame structures of the burned district in that city are reported to have gone through the fire with little damage. Numerous Steel frame, fire proof buildings are expected to be erected in place of old style structures burned. The Plate trade is fair, with good prospects for considerable business in the vessel line. Among the new contracts announced as soon to be placed are the Plates for seven ferry boats, by railroad companies operating ferries in this vicinity. Prices are firmly held. The Bar trade is getting into more satisfactory shape. Orders are being received quite freely and prices are a trifle higher, caused by the advancing tendency in raw materials. We quote at tidewater as follows: Beams, Channels, Angles and Zees, 1.74½c. to 2c.; Tees, 1.79½c. to 2c.; Bulb Angles and Deck Beams, 1.84½c. to 2.05c. Sheared Plates in carlond lots are 1.74½c. to 1.85c. for Tank, 1.84½c. to 2c. for Flange, 1.94½c. to 2.10c. for Marine, and 1.94½c. to 2.50c. for Fire Box, according to specification. Common Bar Iron, 1.35c. to 1.45c.; Refined Bars, 1.44½c. to 1.50c., according to quality; Soft Steel Bars, 1.44½c. to 1.50c.

Old Material.—Consumers generally show a disinclination to purchase, but quite a number are being compelled to enter the market for immediate requirements and are finding themselves obliged to pay slightly higher prices than recently quoted on Steel Melting Scrap and rolling mill material. Holders of such Scrap are quite confident that they will be able to realize better prices shortly and are unwilling to part with much of their accumulations at anything like current rates. Owners of large lots of Relayers, however, are becoming disheartened, and considerable talk is heard of the possibility of their selling them for the best price they can obtain as Rerolling Steel Rails. Approximate figures per gross ton, New York and vicinity, are as follows:

Old Iron Rails\$16.00 to \$	16.50
Old Steel Rails, long lengths 11.75 to	12.00
Old Steel Ralls, short pieces 10.50 to	11.00
Relaying Railsto	18.00
Old Car Wheels	13.00
Old Iron Car Axles	17.50
Old Steel Car Axles 14.00 to	15.00
Heavy Melting Steel Scrap 10.50 to	11.00
No. 1 Railroad Wrought Iron 13.00 to	13.50
Iron Track Scrap 12.00 to	12.50
Wrought Pipe 9.25 to	10.00
Ondinana Tight Dina	
Ordinary Light Pipe 7.00 to	7.50
Cast Borings 5.00 to	5.50
Wrought Turnings 8.00 to	8.25
No. 1 Machinery Cast 12.00 to	12.50
Stove Plate 9.50 to	10.50

### Metal Market. .

New York, February 10, 1904.

Pig Tin.—With the exception of those on strictly spot transactions, quotations have declined below the levels of last week. Spot prices have advanced a shade owing to the small quantity of the metal immediately available in this market. This condition was emphasized by the slowness with which the steamers in port are being unloaded of their Tin. There has been no increase in buying movement by consuming interests, and the speculators are showing no activity. At this writing spot is quoted 27.95c. to 28.25c. Futures are 27.40c. to 27.80c. for delivery the balance of this month and 27c. to 27.25c. for March. The London market has declined more than £1, the closing cable to-day naming £124 17s. 6d. for spot and £125 for futures.

Copper.—Further reductions in prices were made, as consumers have failed to respond to past entreaties made by the producers in the way of lower prices. The market is weak and very dull. The "official" quotations of the Metal Exchange were marked down another ½c., and the trade at large will further discount these figures a similar amount. The figures as posted on 'Change at present are as follows: Lake, 12.25c. to 12.50c.; Electrolytic, 12.12½c. to 12.37½c.; Casting, 12c. to 12.25. London suffered a de cline, as compared with last week, closing cables to-day be-

ing as follows: Spot, £55 12s. 6d.; futures, £55 7s. 6d.; Best Selected, £58 10s. Thus far this month the rate of exportation has been decreased somewhat, the figures at this time being 3700 tons.

Pig Lead.—Here the situation is without change, but in London quotations have advanced. The new prices of the American Smelting & Refining Company are still in force—viz., 4.40c. for 50-ton lots of Desilverized, shipment from the West to be made upon receipt of order. Spot in store is quoted here 4.45c. to 4.50c. St. Louis has declined a shade to 4.25c., and the new London quotation is £11 13s. 9d.

**Spelter**—Is without change, and the market contains no feature of interest. Spot is quoted here 4.90c. to 5c., St. Louis telegraphs  $4.67\frac{1}{2}$ c. and London cables £21 15s.

Antimony—Is higher in this market and abroad. Cookson's is now quoted 7.50c. to 8c., Hallett's 7c. to 7.25c. and other brands are 6c. to 6.50c.

Nickel.—No change is noted in this market, 40c. to 45c. being quoted for large lots, and 50c. to 60c. for smaller quantities.

Quicksilver.—The market is quiet, but steady. Flasks of 76½ lbs. are quoted at \$47.50. London is quoted at £8 5s.

Tin Plates.—There is no change to be noted. Quotations are made on a basis of \$3.45 per box of 14 x 20 100-lb. cokes, f.o.b. mill, equivalent to \$3.64, New York. The Swansea market has declined 1½ pence, the quotation being 11 shillings 3 pence.

### The National Metal Trades Association.

CINCINNATI, OHIO, February 8, 1904.—There is not a ripple of excitement relative to the talked-of disagreement between machine tool men and their employees. The latter seem to be accepting the situation as one that is unavoidable, and are willing to make the best of things as they are.

D. H. McPherson, one of the National Association's most successful district organizers, has been elected secretary of the Philadelphia Metal Manufacturers' Association, of which Mr. Falkenau is president.

Owing to the desire of the majority of the members of the Administrative Council, the date of their meeting, and also that of the annual convention, have been changed. The Administrative Council will meet March 21 and 22, and the convention will be called to order March 23 and continue over the 24th. This was made necessary to avoid conflict with other meetings already arranged.

The National Metal Trades Association will have part of Thursday, February 25, set aside at Washington, D. C., to hear from members of the association doing Government work in protesting against the eight hour bill.

The House Committee on Merchant Marine last Thursday practically admitted that there was no danger in gasoline engines themselves as used in power boat equipment, but that whatever danger there was comes from tank leakage, which it is impossible to prevent by government inspection. Argument further developed the fact that the Government might as well inspect rowboats and sailboats, with a view to prevent accidents that occur, as to inspect boats equipped with gasoline engines.

The millwrights of St. Louis, on last Monday, went out on a strike, demanding 55 cents per hour for 8 hours' work and a closed shop.

From advices it is learned that the number of men discharged in Pittsburgh during the month of January is far in excess of the number employed.

S. W. Watkins has retired from the National Electric Company, Milwaukee, Wis. This will make it necessary for him to vacate the presidency of the National Metal Trades Association. It has not developed as to who will be his successor.

The following district meetings of members of the National Metal Trades Association have been arranged for: Second district, including Vermont, Western Massachusetts and Connecticut, to meet at the Cooley House, Springfield, Mass., Thursday, March 3, at 2 p.m. Charles E. Hildreth is chairman of this district. Seventh district, including Cincinnati and suburbs within a radius of 25 miles, to meet in the rooms of the Cincinnati Metal Trades Association, March 8, at 1.30 p.m. Twelfth district, including Chicago and suburbs within a radius of 25 miles, to convene in the rooms of the National Metal Trades Association, Tuesday, March 1, at 3 p.m.

### Iron and Industrial Stocks.

The special feature of the past week has been the exceptional strength displayed by the United States Steel stocks. In the face of the adverse influences which have affected prices of railroad stocks, United States Steel stocks advanced. The market generally was seriously depressed on Friday by the announcement that the Pennsylvania Railroad Company had decided to borrow \$50,000,000 on their notes, running 18 months, as well as by the rupture between Japan and Russia. Following this came the great Baltimore fire on Sunday and Monday, which caused a sharp recession in the stock market on Monday. But the Steel stocks rose on the assumption that Baltimore's calamity would inure to the benefit of steel manufacturers by causing an extraordinary demand for steel for rebuilding. Such expectations are exaggerated, but they had their effect. The fluctuations in most industrials were generally quite narrow, but Colorado Fuel, which had sold up to 32½ on Thursday of last week, receded to 30½ on Monday of this week, recovering to 31½ on Tuesday. Tennessee Coal likewise receded from 37½ to 34½, recovering to 37. In the same time United States Steel common advanced from 10½ to 11¾, the preferred from 54½ to 58% and the new 5's from 71¾ to 73%. Last sales of active stocks up to 1.30 p.m. on Wednesday were as follows: Car & Foundry common 19½, preferred 69; Locomotive common 21, preferred 79½; Colorado 31¾; Pressed Steel common 30, preferred 79½; Colorado 31¾; Pressed Steel common 30, preferred 79½; Colorado 31¾; Pressed Steel common 30, preferred 79½; Colorado 31¾; Pressed Steel common 37, preferred 79½; Tennessee 37; United States Steel common 11¼, preferred 56%, new 5's 72½.

At the annual meeting last week of the Manufacturers'

At the annual meeting last week of the Manufacturers' Light & Heat Company of Pittsburgh the Board of Directors was re-elected for the ensuing year. While no official report was made public, it is said that the year's operations resulted in satisfactory returns. The net earnings are said to have been about \$2,500,000, after the payment of all charges, some of which were of a nature that will not be encountered again, having been incurred in connection with the absorption of other companies. The earnings of the underlying companies are said to show an increase of \$700,-000 over their earnings when they were operated individually. The surplus of the Light & Heat Company will amount to about \$1,000,000. During the year over \$200,000 bonds were retired, and the stockholders increased from \$00 to 1,800. It is said that the investments now show a value of \$34,000,000, against which is issued something less than \$21,000,000 stock and less than \$10,000,000 bonds. There was said to have been an increase in consumers of about 15 per cent., and of the holdings amounting to about 500,000 acres, only about 100,000 have been developed.

Of the \$2,000,000 6 per cent. gold bonds authorized last year by the Standard Steel Car Company, Pittsburgh, \$1,000,000 were recently canceled. The remaining \$1,000,000 now outstanding are dated May 1, 1903, and are due in 1913, but are subject to call at 105 after May 1, 1908, to the amount of \$400,000.

The annual report of the Empire Steel & Iron Company for the year ended December 31, 1903, just issued, shows the following changes from the previous year:

1903. Net earnings\$388,529 Depreciation139,172	1902. \$249,662 46,575	Increase. \$138,867 92,597
Net profits\$249.357 Less 3 per cent. on preferred 75,000	\$203,087 75,000	\$46,270
Balance	\$128,087 170,148	\$46,270 *32,595
Surplus\$36,804 Previous surplus	def. \$42,061 170,700	\$78,865 *42,061
Total surplus December 31.\$165.443	\$128,639	\$36,804

\* Decrease

The last installment of 20 per cent. on the stock of the Lackawanna Steel Company has been called. It is payable on or before April 1.

The Northern Engineering Works of Detroit, Mich., builders of electric and hand power cranes, have increased their capital stock to \$150,000.

Dividends.—The American Radiator Company have declared the regular quarterly dividend of 1% per cent. on preferred, payable February 15. Books close February 10, reopen February 15.

Niles-Bement-Pond Company have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February 15; books close February 8, reopen February 16. A semiannual dividend of 4 per cent. was also declared on common stock, 2 per cent. payable March 19 and 2 per cent. June 18. For the dividend payable March 19 the common books close March 12, and for dividend payable June 18 books close June 11, reopen March 21, and June 20, after the payment of respective dividends.

June 20, after the payment of respective dividends.

The Pratt-Whitney Company have declared the regular quarterly dividend of 1½ per cent. on the preferred stock,

payable February 15. Books will close February 8, reopen February 16.

The Hamilton Machine Tool Company of Hamilton, Ohio, have declared a quarterly dividend of 1½ per cent. on the preferred stock.

The United States Stamping Company, Moundsville, W. Va., have declared a quarterly dividend of 2 per cent. and have added \$26,000 to surplus.

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# The New York Machinery Market.

NEW YORK, February 10, 1904.

While conditions remain unchanged so far as actual orders are concerned, several inquiries have come to the front which have instilled better feeling in certain branches of the trade. This does not mean that these inquiries promise any marked business activity, however, for the business situation in the machinery district is so quiet that the least disturbance of its placidity attracts the attention which but a short time ago would have been reserved for something of far greater magnitude. Anything bearing any semblance of possible business is most eagerly sought and followed up nowadays, and in this way matters that would formerly have passed into obscurity now obtain a prominence through which they command the attention of the entire trade.

A matter which is attracting considerable attention in the trade is a fresh outbreak of rumors to the effect that the Allis-Chalmers Company are preparing to soon embark in the manufacture of electrical apparatus. The occasion for this talk at this time is a report which came from Pittsfield, Mass., several days ago stating that John H. Kelman, superintendent of the Stanley Electric Company, had resigned his position to take one with the Allis-Chalmers Company. The advices from Pittsfield also stated that William Stanley and John F. Kelly, who were prominently identified pany. The advices from Pittsfield also stated that William Stanley and John F. Kelly, who were prominently identified with the development of the Stanley Electric Company prior to their absorption by the General Electric Company, are also interested in the Allis-Chalmers move. Until this writing we have been unable to verify these rumors or obtain any information of an official nature bearing on the subject. Members of the trade who are prominently identified with the engine building and electrical branches of industry are Memoers of the trade who are prominently identified with the engine building and electrical branches of industry are disposed to place a good deal of faith in the accuracy of the reports. They are unanimous in voicing their belief in the plausibility of such a move at any rate. They state that in view of recent developments whereby the General Electric Company and the Westinghouse interests are furnishing complete generating sets in the form of their turbo-generators, the Allis-Chalmers Company would be perfectly justified in entering the electrical field as a measure of self defense. In conversing on this subject men prominent in the engine trade draw attention to the fact that before the General Electric Company took up the manufacture of the Curtis turbine they worked very harmoniously with the Allis interests, as a testimonial of which are the many generating sets composed of Allis engines and General Electric generators to be seen all over the world. As this relationship was broken by the advent of the General Electric urbose the second of the General Electric tribuses. generator the trade have ever since been looking for signs pointing to the invasion of the electrical field by the Allis Company. In this connection the trade are also awaiting the appearance of an Allis steam turbine, and the opinion now finds expression that present indications point to a strong likelihood that the mechanical public is soon to witness the appearance of the Allis-Chalmers turbo-generator.

ness the appearance of the Allis-Chalmers turbo-generator. The most interesting matter before the machine tool trade is the list of equipment which the Power Mining Machinery Company of 52 William street, New York, are to purchase for the extension of their present machine shop at Cudahy, Wis. This list was made up by F. M. Davis, superintendent of the Cudahy shops, and forwarded to the New York office, from whence it has just been sent out into the trade for hide. The orders will be placed as soon as the the trade for bids. The orders will be placed as soon as the proposals are properly tabulated. The list, which is as fol-

lows, will probably be extended shortly:

One cylinder boring machine, with 12-inch bar, capable of boring a cylinder and facing same 8 feet long; center of bar to platen 4 feet, platen 8 feet wide; electric motor

One 16 x 6 foot (under the tools) boring and turning mill, with side head on right hand housing; side head to be arranged to turn crown of wheel; left hand boring head on cross rail to have rotary bar for boring fly wheels; this head being rigid, right hand head on cross rail to have angle fea-tures; both heads to have 60 inches travel of bars; side head to have the same amount of longitudinal feed; all heads to have independent positive feeds ranging from 1-32 to % per revolution of work; heads on cross rails to have quick power travel.

One 12 x 8 foot boring and turning mill, with the same features embodied as the 16-foot mill. This side head is very necessary in order to be able to turn fly wheels grooved

Four 2 by 24 inch turret lathes with outfits; one of these machines to be delivered at once, subject to approval, and the other three to be delivered in about three months.

One slab mill and keyseating machine, to have vertical milling attachment.

One pulley hub drilling machine for drilling for set crews and pulleys, &c.
Two 18-inoh rapid reduction lathes.

Three 18-inch lathes, with taper attachment, for small work; these lathes to have quick change feed geared for screw cutting, &c.

One 24-inch shaper of some good standard make.

One 24 inch x 6 foot planer.

One double head milling machines.

One double column milling machine.

One double head milling machine with table 8 feet long.

Three 8 x 6 foot (under the tools) boring mills, two heads; travel of boring bar about 48 inches, independent geared feed drive for each head; table of mill to be within 6 inches of diameter of capacity of mill.

Two large radial drills, very powerful; 6-foot arm to be

capable of tapping 5-inch pipe tap in cast iron, with tapping

attachment.

One 6 x 6 x 18 foot planer with two heads on cross rail, also with two side heads; each head to have independent

One 48 inch x 12 foot planer with four heads; independent feed with all heads.

One 48 inch x 30 foot lathe. One 40 inch x 24 foot lathe.

One 36-inch steel pulley lathe.
One 24 inch x 30 foot shafting lathe, capable of turnshafting 5 inches diameter 24 feet long; this must have tail stock drive.

One 11/2-inch duplex bolt cutter.

One eight-spindle nut tapping machine, capacity from % 2 inch nuts.

Three 20-inch turret lathes for chucking work; these lathes must have friction back gear and be powerful ma-

Two 6 feet x 48 inches (under tool) vertical boring mill with two heads; table to be 5 feet 6 inches diameter at least. Two 5-foot mills with two heads.

Four 24-inch lathes, 14 to 16 feet long, with taper at-

tachment; these to have quick change feeds.

Two 30-inch lathes, 18 feet long, with quick change feeds.

One horizontal boring machine; length of table, 9 feet diameter; bar, 4 inches; top of carriage to center of bar, 25

For the blacksmith shop the following tools are desired: One 1½ bolt and rivet heading machine, with continuous motion; also with attachment called the "kicker" to remove bolts and rivets from machine.

One 3-inch heading, upsetting and forging machine, with

automatic stop.

For the boiler shop an angle iron shear, with capacity of

A list of machine tools, amounting to about \$10,000 in value, has been issued by the Interborough Rapid Transit Company of 21 Park Row, New York. The tools are for the equipment of the machine shop to be located at 148th street, rose Seventh avenue by the Interborough Company. Seventh avenue, by the Interborough Company.

The purchasing department of Swift & Co., 138-154 Ninth street, Jersey City, N. J., are sending to the trade specifications for a large amount of mechanical supplies which they intend purchasing with as little delay as possible. The materials are for new plant construction at East Cambridge, Mass., and include several boilers, and a large amount of tank and structural work, including steel and cast iron tanks, coils, channels, &c. We understand that the amount of this material required is rather large.

Another set of bids will be invited for the construction of the foundry and power house of the new plant which the Lidgerwood Mfg. Company of 96 Liberty street, New York, will erect at Newark, N. J. The only contracts awarded thus far have been for the foundations of these two buildings. Proposals have previously been made in connection with the balance of the work, but they were rejected some time ago. It is now intended to carry to completion the foundry and power plant. No orders for equipment have been placed as yet. The foundry building will be 120 x 600 feet, and will have a capacity of about 75 tons daily. The power station, which is to be eventually equipped with about 1000 horsepower of generating apparatus, is to have one 250 horsepower unit placed in position for operation of the foundry. The building will be 40 x 225 feet in size. Decision to commence work on the great machine shop which the company propose to place at this point, as well as the foundry and power house, has not been arrived at as yet. An official of the company said yesterday that until business improved somewhat they would remain in their own machine shop at South Brooklyn, N. Y., which is plenty large enough to keep pace with the present demand. Another set of bids will be invited for the construction keep pace with the present demand.

The Hogan Motive Power Company of New Haven, Conn., who are building a new plant for the production of gas and gasoline engines, expect to have their buildings completed about April 1. They will then take up the subject of equipment, purchasing a good sized line of milling machines, shapers, lathes, boring mills, planers and other machine tools. G. Edward Osborn, the vice-president of the company, has the matter in hand

machines, snapers, latties, boring littles, planets and other machine tools. G. Edward Osborn, the vice-president of the company, has the matter in hand.

The city of Providence, R. I., is advertising for proposals for furnishing and erecting complete, in the city's water works pumping station at Cranston, R. I., a 25,000,000-callen and an alternate hid for a 30,000,000-callen pumping gallon and an alternate bid for a 30,000,000-gallon pumping plant, to pump water to a reservoir one mile from source of supply, with a total difference of elevation of 181.75 feet

Each bid must be for the engine complete, with all the usual accessories. Proposals will be received until 11 a.m. March 1 by the Commissioner of Public Works.

The Girard Machine Works of 2616 Girard avenue, Philadelphia, who are erecting a new plant at Minersville, Schuylkill County, Pa., are now installing the machinery. They will be in the market shortly for a complete wood working equipment, a medium sized drop hammer and a small foundry equipment. Chas. A. Gildemeyer, who is located at the new works, has the matter in charge.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 1 for a quantity of supplies for the Norfolk, Charleston and Port Royal navy yards, including electric blowers, electric travel-ing crane, foundry cupola, drills, tools, &c.

The following bids were opened February 2 for supplies for the New York Navy Yard:

Bidder 7. Fairbanks Company, New York.

11. W. H. Foster, New York.

13. Drew Machinery Agency, Manchester, N. H.

20. Alliance Machine Company, Alliance, Ohio.

21. Niagara Machine & Tool Works, Buffalo, N. Y.

22. Becker-Brainard Milling Machine Company, Hyde Park, Mass.

24. Gleason Works, Rochester, N. Y.

Gleason Works, Rochester, N. Y.
 Thresher Electric Company, New York.
 I. H. Johnson, Jr., Company, New York.
 Garvin Machine Company, New York.
 Williams, White & Co., Moline, Ill.
 Greer-Clarkson Company, Lebanon, Pa.
 Springfield Machine Tool Company, Springfield, Ohio.
 G. A. Ohl & Co., Newark, N. J.

54. Doubleday-Hill Electric Company, Pittsburgh, Pa. 55. Manning, Maxwell & Moore, New York. 60. Bridgeport Safety Emery Wheel Company, Bridge-

port, Conn.
64. Erie Foundry Company, Erie, Pa.
67. Falkenau-Sinclair Machine Company, Philadelphia. Pa.

68. Prentiss Tool & Supply Company, New York. Detrick & Harvey Machine Company, Baltimore, Md. 71.

Petrick & Harvey Machine Company, Baltimore, Md.
 W. C. Gold, Philadelphia, Pa.
 Wm. Sellers & Co., Philadelphia, Pa.
 Builders' Iron Foundry, Providence, R. I.
 Niles-Bement-Pond Company, New York.
 Montgomery & Co., New York.
 American Ship Windlass Company, Providence, R. I.
 Lidgerwood Mfg. Company, New York.
 W. W. Clark & Sons, Baltimore, Md.
 Class 36. One electrically driven winch, capable of hoist-

Class 36. One electrically driven winch, capable of hoisting 1220 pounds at a speed of 40 feet per minute—Bidder 39, \$565; 88, \$625; 97, \$780; 55, \$821; 101, \$962.50; 25,

Class 37. One electrically driven winch, capable of hoisting 600 pounds at a speed of 80 feet per minute—Bidder 39, \$570; 88, \$625; 97, \$770; 55, \$810; 101, \$962.50; 25,

\$1050. Class 38. One electrically driven drum hoist, capable of lifting 3000 pounds at a speed of 40 feet per minute—Bidder 39, \$585; 88, \$830; 79, \$1015; 55, \$1069; 101, \$1100; 25, \$1200.

Class 39. One universal monitor lathe--Bidder 68, \$590;

Class 39. One universal monitor lathe—Bidder 63, \$350, \$55, \$565, \$650 and \$705; 7, \$707; 43, \$710; 32, \$731. Class 40. One universal monitor lathe—Bidder 43, \$400; 32, \$430; 7, \$455; 68, \$475; 55, \$499 and \$510. Class 41, One monitor lathe—Bidder 32, \$480; 55, \$559

and \$490; 68, \$559; 7, \$564. Class 42. One motor driven engine lathe—Bidder 83, \$3580; 28, \$4438; 68, \$4689 and \$4484; 55, \$5117, \$4100 and \$4750.

Class 43. One horizontal boring and drilling machine—Bidder 83, \$1450 and \$1345; 68, \$1455; 11, \$1700; 55, \$1760; 79, \$2200.

Class 44. One double blind style boring and mortising machine—Bidder 55, \$146; 68, \$249; 13, \$300.

Class 45. One chain saw mortising machine—Bidder 55, \$960; 68, \$960.
Class 46. One automatic wire straightening and cutting machine—Bidder 55, \$234; 83, \$254; 7, \$303; 68, \$327; 13,

\$335. Class 47. One wire crimping machine—Bidder 46, \$700;

88, \$850.
 Class 48. One universal cutter and tool grinder—Bidder
 \$222; 68, \$289; 54, \$306.50; 55, \$424 and \$252.

Class 49. One emery grinder for grinding iron and steel—Bidder 7, \$217.73; 72, \$222; 83, \$224; 60, \$233.23; 84, \$240; 55, \$285 and \$255; 68, \$286; 54, \$319.30; 80, \$330.50; 32, \$340.

Class 50. One engraving machine-Bidder 7, \$560; 22,

Class 51. One double angle shearing machine—Bidder 55, \$1260; 83, \$1498; 36, \$1880; 7, \$2090; 68, \$2289; 13, \$2850, \$3950 and \$3260.

Class 52. One metal cutting band saw—Bidder 55, \$387;

68, \$414; 101, \$418.

Class 53. One power press—Bidder 67, \$82, \$962, \$800 and \$880; 21, \$854; 46, \$875; 55, \$885; 7, \$911.

Class 54. One 1200-pound steam drop hammer for drop

Class 54. One 1200-pound steam drop nammer for drop forge work—Bidder 64, \$1350; 20, \$1370; 55, \$1485; 13, \$1610 and \$1885; 83, \$1690; 101, \$1892.50.

Class 55. One automatic bevel gear planer—Bidder 55, \$1430; 24, \$1495.

Class 56. One automatic spur gear shaper-Bidder 55, \$1475.

Class 57. One bolt pointer—Bidder 83, \$224; 68, \$227; 55, \$232; 7, \$234; 13, \$249 and \$276; 71, \$267.
Class 58. One band resaw stretcher—Bidder 13, \$83; 55,

Under bids opened December 15 for supplies for League Island, Washington and Annapolis navy yards, Class 24, two engine lathes, was awarded to the Fairbanks Company, New York, at their bid of \$1250, and Class 25, bending rolls, was awarded to Manning, Maxwell & Moore, New York, at their bid of \$1830.

The following awards have been made for supplies for the Portsmouth, Boston and Newport navy yards, bids for

which were opened December 15:
General Electric Company, Schenectady, N. Y., Class 1,

10 horse-power electric motor, \$318. Crocker-Wheeler Company, Ampere, N. J., Class 2, four electric motors, \$353.

Holtzer-Cabot Electric Company, Brookline, Mass., Class 3, one motor, \$986.
Manning, Maxwell & Moore, New York, Class 10, one

Manning, M grinder, \$58.25.

Manhattan Supply Company, New York, Class 11, one automatic knife grinder, \$70.

Hobbs Mfg. Company, Worcester, Mass., Class 12, one pattern makers' lathe, \$130; Class 16, one buzz planer, \$150. Thomas & Lowe Machinery Company, Providence, R. I., Class 13, one standard engine lathe, \$1535; Class 14, one en-

gine lathe, \$425.

Prentiss Tool & Supply Company, New York, Class 15, one metal planer, \$974.

Beutel-Margedant Company, Hamilton, Ohio, Class 17, one cabinet surface planer, \$480.

Drew Machinery Agency, Manchester, N. H., Class 18, one pedestal tenoning machine, \$185.

W. H. Foster, New York, Class 19, one 24-inch draw cut

shaper, \$900. American Tool Works Company, Cincinnati, Ohio, Class

20, one shaper, \$443.
Dietrich & Harvey Machine Company, Baltimore,

Class 21, one milling, drilling and boring machine, \$2228.

Niles-Bement-Pond Company, New York, Class 22, one
No. 3 sinking machine, \$890.

Geo. F. Blake Mfg. Company, New York, Class 23, 20
vertical single boiler feed pumps, \$1157.

# Australian Notes.

Melbourne, January 1, 1904.—The Sydney Harbor Bridge, as foreshadowed in these columns, is now definitely shelved. 'The Advisory Board recommended the acceptance of J. Stewart & Co.'s tender, approximating The Minister of Works, in presenting the £2,000,000. report to Parliament, said he would take no steps until "the public finances were in a better condition." The matter will doubtless be reopened, temporarily, when the next elections are in sight. As a commercial proposition, it is dead for ten years.

The Iron, Steel and Metals Mfg. Company, 408 Collins street, Melbourne, have been formed to acquire some new process for the utilization of iron sand. Particulars are not yet available. A well-known iron founder named Beighton is interested in the company, which thus appear to be a bona fide speculation.

G. & C. Hoskins, Sydney, have formed their engineering business into a limited company. The shares are all held in the family. The firm have put through some of the largest Australian contracts. C. Hoskins recently returned from a European trip.

The Westralia Iron Works, Limited, Tremantle, W. A., is the title of a new concern just brought into being by a couple of Sydney engineering firms, for the purpose of manufacturing rolling stock in Western Australia. The directors of the new company are the men who preside at the head of the two Sydney firms referred tonamely, the Clyde Engineering Works and Ritchie Bros.

The Westinghouse brake is at last to be fitted on all the rolling stock of the South Island of New Zealand. Its absence in the past has been responsible for many thrilling tales of hairbreadth escape, and the fact that there have been no really awful smashes is accounted for by pure good luck only.

# Furnace Capacity Returning to Normal Condition.

# Anthracite and Coke Stocks Show a Decline.

The details which we submit below show that the steel plants of the country have resumed work on a very considerable scale, a movement which is still under way since a further number of furnaces have blown in during the last ten days. The situation with the merchant furnaces has changed but little, except that they have reduced their stocks somewhat.

Monthly	Dia	Iron	Production

	September.	October.	November.	December	. January.
	(30 days)	(31 days)	(30 days)	(31 days)	(31 days)
New York	49,664	48,236	43,558	36,320	32,577
New Jersey.	. 18,263	14,830	12,556	19,324	19,910
Schuylkill Val	47,744	38,750	27,520	24,573	24,571
Lehigh Valley	45,938	35,862	37,350	37,669	35,735
Lower Susque	9-				
hanna and L	eb-				
anon Valley	49,629	42,988	26,852	8,885	17,469
Pittsburgh.dis	. 385.967	357,704	242,640	178,257	245,551
Shenango Val	. 84,827	81,232	32,929	24,856	31,445
West. Penn	. 102,801	102,789	97,397	92,422	85,186
Md., Va. and	d				
Kentucky	64,395	71,168	64,509	60,748	55,709
Wheeling dist	. 81,305	44,413	18,071	3,437	21,089
Mahoning Val	. 122,077	87,810	52,784	30,289	59,932
Cent. and No	. 106,601	94,801	47,344	57,296	41,491
Hanging Rock	k				
and Hocking	3				
Valley	. 28,437	25,492	20,464	18,244	17,250
Ill., Wis., Minn	.,				
Mo. and Co.	1. 201,070	200,062		96,623	73,886
Alabama	. 133,008	148,527	138,806	129,350	124,483
Tennessee, No	),				
Carolina and	d				
Georgia	34,991	29,992	30,211	28,402	33,089
Totals	.1.553,717	1,425,656	1,039,622	846,695	922,746
Charcoal pig		87.537		45,805	43,020
Totals	.1,596,703	1,462,193	1,078,628	892,500	965,766

For a series of months the active blast furnace capacity was as follows:

	Total		
	capacity	Coke	Charcoal
	per week.	capacity	capacity
	Gross tons.	per week.	per week.
February 1, 1904	. 287,622	278,319	9,303
January 1		185,636	9,922
December 1, 1903	. 253,930	244,156	9,774
November 1	. 282,219	273,715	8,504
October 1	. 361,492	353,142	8,350
September 1	. 369,933	360,197	9,736
August 1	. 362,330	353,681	8,649
July 1	. 395,042	384,825	10,217
June 1	. 398,139	388,178	9,961
May 1	. 381,697	373,496	8,201
April 1	. 376,576	368,215	8,361
March 1	. 354,733	347,424	7,309
February 1	. 343,111	335,339	7,772
January 1	. 353,800	346,073	7,727
December 1, 1902	. 343,817	336,617	7,200
November 1	. 337,559	330,110	7,449
October 1	. 345,048	337,837	7,211
September 1	. 335,189	328,243	6.946
August 1	. 336,465	328,745	7,720
July 1	. 310,950	303,793	7,157
June 1	. 344,748	337,492	7,256
May 1	. 352,064	337,627	6,437
April 1	. 337,424	331,140	6,284
March 1	. 323,028	316,039	6,989
February 1	. 332,045	325,440	6,605
January 1	. 298,460	291,992	6,468
December 1, 1901	. 324,761	317,358	7,403

During the month the United States Steel Corporation blew in the following 30 furnaces: Edith, one Carrie, seven Edgar Thomson, two Isabella, one Monongahela, two Newcastle, one Sharon, one Bellaire, three Mingo, one Benwood, one Central, one Lorain, two Joliet, five South Chicago and one Ohio. Besides these there were started Genesee in New York, one Eliza in Pittsburgh, No. 2 Paxton and one Pennsylvania Steel furnace in the Lower Susquehanna, one Lebanon and Lochiel in the Lebanon Valley, La Belle in the Wheeling district, Bessie and New York in the Hocking Valley, Etna in the Hanging Rock region, the new Alabama Steel & Wire Company's furnace in Alabama, and Searles in Tennessee. There were blown out one Niagara in New York, one

Saxton in Western Pennsylvania, Ivanhoe in Virginia, one Watts in Kentucky, one Iroquois in Chicago and Tod in the Mahoning Valley.

Coke and Anthracite Furnaces in Blast.

	-	-Febru	ary 1	Janu	ary 1.
Location No	imber :	Number	Capacity	Number	Capacity
of furnaces. of	stacks.	in blast.	per week.	in blast.	per week.
New York		6	7.258	6	7,956
New Jersey		4	4.207	5	4.581
Spiegel		2	258	2	310
Pennsylvania:					
Lehigh Valley	27	13	8,069	13	8,506
Spiegel		1	105	1	100
Schuylkill Valley		6	5,558	6	5.550
Low. Susquehann	a10	3	4,000	1	1,550
Lebanon Valley		2	1,364	1	404
Spiegel	1	1	720	0	0
Pittsburgh Distric	et.37	30	82,750	15	41,300
Spiegel	2	2	1,500	2	1,550
Shenango Valley.		6	12,041	3	3.850
West. Penn	18	14	18,885	15	20,700
Spiegel	1	1	350	1	937
Maryland	5	3	5;460	3	5,453
Wheeling District		7	15,250	1	2,350
Ohio:					
Mahoning Valley.	15	7	14,790	. 7	13,244
Cent. and North.	16	9	19,250	7	11,892
Hocking Valley	2	2	680	0	0
Hanging Rock	12	6	4,405	5	2,981
Illinois	19	10	21,150	4	8,000
Spiegel	2	0	0	0	0
Minnesota	1	0	0	0	0
Wisconsin	5	2	2,070	2	1,974
Missouri	1	0	0	0	0
Colorado	5	0	0	0	0
The South:					
Virginia	23	10	6,681	11	6,950
Kentucky	8	2	664	3	1,477
Alabama	42	26	28,754	27	28,146
Tennessee	16	12	7,375	11	6,173
Georgia	1	1	525	1	400
North Carolina	1	0	0	0	0
Totals	.355	188	274,119	153	185,636

#### Charcoal Furnaces in Blast.

014	mi chas	1 401 1000 000	win Druge.		
	,	Febru	ary 1.—	-Janu	ary 1
Location Nu	mber	Number	Capacity	Number	Capacity
of furnaces. of	stacks.	in blast.	per week.	in blast.	per week.
New England	. 5	2	138	2	193
New York	. 4	1	600	1	638
Pennsylvania	. 5	1	35	2	103
Maryland	. 1	0	0	1	83
Virginia	. 4	1	57	2	107
Ohio	. 8	1	43	3	200
Tennessee	. 1	1	60	1	64
Georgia	. 5	3	905	2	731
Alabama	. 5	. 4	935	4	1.152
Michigan, Missouri a	nd				
Wisconsin	.14	12	6,280	12	6,401
Texas	. 1	1	250	1	250
Totals	.53	27	9.303	31	0.022

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, Clairton, La Belle, Bethlehem and Colorado companies show a total product of 502,994 tons for January, as compared with 406,730 tons for December, 553,067 tons for November, 829,215 tons for October, 956,363 tons for September, 993,564 tons in August, 987,855 tons in July, 1,021,839 tons in June, 1,037,325 tons in May and 966,850 tons in April.

Production of Spiegeleisen.—The production of spiegeleisen and ferromanganese was 6673 tons in January, as compared with 15,394 tons in December, 17,695 tons in November, 10,374 tons in October, 8406 tons in September, 15,862 tons in August, 14,933 tons in July, 16,309 tons in June, 17,600 tons in May and 17,555 tons in April.

### Stocks

The position of furnace stocks sold and unsold, as reported to us, was as below on February 1, as compared with the preceding months, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron:

 Stocks.
 Sept. 1.
 Oct. 1.
 Nov. 1.
 Dec. 1.
 Jan. 1.
 Feb. 1.

 Anthracite and Coke. 356,701
 450,193
 539,810
 593,239
 597,954
 573.085

 Charcoal... 45,305
 56,245
 57,589
 60,922
 90,711
 107.826

 Totals... 402,006
 506,438
 597,399
 663,161
 688,615
 680,911

A. J. Forbes-Leith, for many years prominently identified with Chicago steel interests, is now in this country.

# HARDWARE.

THE pooling of the interests of the Axe manufacturers, the announcement of which was made in our columns last week and is supplemented by fuller particulars in the following pages, finds much to justify it beside the usual desire to obtain higher prices. The market for this line of goods has undoubtedly for some time been in a condition which was far from satisfactory to manufacturers, while at the same time it is noticeable that some at least of them, owing perhaps to good management or other fortunate circumstances, have apparently been enabled to do a profitable business and strengthen their position in the trade. Apart, however, from the matter of prices, which have undoubtedly been too low, the existence of abuses connected with unrestrained competition and developed during years of eager pursuit of business furnish a reason why manufacturers should work together in bringing about a better state of things. If this can be done there will be resultant advantages which will perhaps justify the formation of a pool, a course of action which, if the object is simply to establish higher prices, is often attended with ultimate injury to the interests it is designed to further.

In the Axe market there have been customs and inconsistencies which it is difficult to justify when the interests of the manufacturers and the trade at large are considered. It is not reasonable that a 3-pound Axe should be sold at the same price as a 5-pound Axe, which costs about 75 cents per dozen more. For this few parallels can be found among other lines of goods, and the trade should welcome the putting into effect of a classification of weights with corresponding prices, as fully described in another column.

Jobbers' brands have heretofore been sold regularly at 25 cents or more per dozen less than the same goods under the manufacturers' brands. This practice was clearly unwarranted, there being no reasonable foundation for it, in view of the fact that jobbers' brand Axes cost the manufacturer at least 10 cents per dozen more than the same goods under factory brands, taking into account the additional cost of labels obtained in comparatively small quantities and the disadvantage of making up Axes in small lots. In addition to this, it has been impossible to operate plants uniformly throughout the year, from the fact that the great bulk of jobbers' brand goods have been ordered between February and April for shipment prior to October, leaving a long interval when the manufacturer has been obliged to anticipate requirements, which could not be done accurately, thus frequently causing loss. Under these conditions, it is only right that the jobbers' brands should command at least as high a price as the regular factory brands. It is obvious, too, that the trade at large and consumers, as well as the manufacturers, will reap advantage from having the jobbers' brands thus given the same position as the manufacturers', inasmuch as when purchased at a lower price they are likely to be found of inferior quality. It is not in accordance with the laws of business that articles furnished at prices which are unduly and unreasonably low shall be of the same excellence as if a reasonable price had been paid. The action of the manufacturers is certainly a step in the right direction. It may be that even more should be done for the correction of abuses in connection with special brands.

The action taken by the manufacturers in regard to sales periods is also to be commended on general prin-

ciples. Hitherto manufacturers have made annual contracts which have frequently been next to worthless so far as the manufacturer is concerned, for the reason that, while held to a bad bargain on his part, he has not felt himself warranted in holding the purchaser, when, as was frequently the case, it would have been to his immediate advantage to do so. With three or four sales periods, neither the manufacturer nor the merchant is likely to be, with good management, seriously caught, and the disposition to speculate will be greatly reduced. The market also will not be so apt to be overstocked at any time, thus reducing one of the annoyances and disturbing influences from which both manufacturers and jobbers have suffered.

The organization of a pool is often regarded by the trade as an intimation that prices are to be gradually and unreasonably advanced in such a way as to develop competition and finally bring disaster on the united interest. It is to be hoped that the Axe manufacturers and the Hatchet manufacturers who are so closely related in these efforts, will see to it that they do not make this fatal mistake. If they are able to restrain the desire for the profits which inflated prices would for a little while yield them, and can be content with reasonable margins and the elimination of deep-seated abuses such as we have pointed out, the trade will regard with more than usual forbearance the formation of a combination which would otherwise in the long run be detrimental to the interests of all.

# Condition of Trade.

Most of the jobbing houses are evidently well supplied with goods, so that their requirements are not heavy so far as current business is concerned. The orders which are coming in to manufacturers are, however, interpreted as indicating that the calls made upon the jobbers by their customers are of such character as to require the early replenishment of stocks. Purchases by both the jobbing and the retail trade are in practically all cases on conservative lines, as there is a feeling abroad in the trade that prices are likely sooner or later to be lower without, however, the apprehension of any sudden break in the market. The prosperity of the country is such that, notwithstanding the curtailment of enterprise in certain direction, there is left a solid basis for excellent business. The indications for building and enterprise in many ways is regarded as at least fair, and a good amount of general activity is expected. Prices show little change, and are in general well maintained. The sympathy of the trade has gone out, in large measure, to Baltimore, in view of the great calamity which has befallen the city, which, however, met with characteristic courage and enterprise, will be, it is hoped, the precurser of even a larger prosperity. The breaking out of war in the Orient commands, too, the public attention, and, in addition to speculations as to its outcome, its effect upon our commercial interests are being canvassed. The reports of the many meetings of retail Hardware associations will be regarded with care by the various classes in the trade, whether manufacturers, jobbers or retail merchants. The growing number and influence of these organizations. which have to do directly with trade questions of vital importance to every branch of the trade, is one of the features of the times. The result of their activities should be the improvement of trade conditions and the correction of abuses which have gradually crept in. In this way they should contribute to the bringing about of a better state of things, and thus be to the advantage of manufacturers and jobbers as well as of retail merchants.

### Chicago.

Each week shows an improvement in the Hardware business over the last, and if the present rate of increase keeps up this season will be a record breaking one. As a matter of fact, however, the active buying that is going on now is largely the result of the unnatural stagnation in the months of November and December, during which time retail Hardwaremen throughout the country allowed their stocks to run lower than they should have done. That this is true is indicated by the urgent demands for immediately delivery that accompany most orders. It is hard to single out any one line of Hardware that is moving more rapidly than others, as the activity seems to be about equally divided, with here and there an extra spurt in one line or another, due to either a notice of higher prices or a feeling that higher prices are likely to come. It is understood here that an advance in Chisels is to take place shortly, similar to advances that were made recently on Axes and Edge Tools, and the general spread of this report through the Hardware trade has led to active buying in this line. Similarly, Locks and Knobs, which underwent many changes in list and discount January 1, with the higher average of cost, are understood to be scheduled for an advance very shortly. This possibility of an advance is leading to a special activity in these two lines, although all lines of Builders' Hardware are better than they have been for some time. Leading jobbers here believe that an advance is to come on Cut Nails, although the association, which met in Philadelphia last week, did not definitely announce an advance, owing, it is understood, to the fact that one or two interests at that time were not brought into line, but are likely to be, shortly. In this case, too, the feeling that an advance is coming is leading to larger orders than usual. Garden Tools, Poultry Netting, Wire Cloth and other early spring lines are experiencing great activity in demand, and already manufacturers of Children's Sleds are booking heavy orders for next winter's delivery. The fact that retailers have sold out their stocks so readily this year at a good profit has led them to cover their needs for the following winter. The Stove situation is an interesting one also. Indications point to the fact that the surplus left on hand among country merchants and jobbers, owing to the hard coal famine a year ago, has been absorbed, and merchants' stocks are at a very low ebb. This view is supported by the fact that Stove manufacturers are now booking a better business than they have for a long time, at prices that leave at least a manufacturing profit. Almost all the materials that go into Stoves made now are cheaper than they were a year ago, with the exception of Stove Bolts, which are a little higher. Washing Machines are actively in demand, as retail dealers are learning that it pays to carry side lines of this character, not only because of the trade that they attract to the store, but on account of the actual profit on the sales made. The leading Paint companies express the greatest satisfaction with the quantity and quality of orders being booked at the present time, and they are pushing their trade among Hardwaremen as never before, because they find a spirit of responsiveness in the Hardware trade that is quite unusual. Manufacturers of Refrigerators and Ice Cream Freezers profess to be elated at the quantity of business that they are entering, and many of them state that they have already filled their plants for the present season's output and are booking orders for the coming season. The tendency among country retailers is to buy better Refrigerators and better Freezers than in previous years. This is due, doubtless, to the fact that farmers, who are their chief customers, have money—more money than they ever had before. During the Wisconsin State convention a Hardwareman arose and asked this question: 'What proportion of Wire, Nails and Sash Weights can a Hardwareman carry in relation to his other stocks and not fail in business?" And the answer came from all parts of the hall that if profits were as low on other lines as they were on this the Hardwareman could not exist. Notwithstanding this fact, local Hardwaremen feel that

they are compelled to carry these lines, just as the grocer is compelled to carry sugar, even if the profit is only nominal, and manufacturers of Wire goods state that they are already almost swamped with business. Makers of Roofing and Siding, and manufacturers of, and dealers in, Tin Plate, report that business is better than it has been for a long time. A firmer tone has developed in Sheet Steel, the independent mills leading in their endeavor to secure higher prices. Doubtless, sharp advances would have been made in these lines long ago had it not been for the attitude of the leading producer in holding prices down to the point where the smaller competitive mill is practically running at a loss. Wagons and Carriages, while not strictly Hardware goods, are carried to such an extent by Hardwaremen that a consideration of this line is not out of place in this column. A leading Western manufacturer stated to the writer that his business, which has grown each year since its inception, is now experiencing a greater growth than at any time in its history. He looked for lower costs on all materials that enter into Carriages, except lumber, and stated that already the price of Glass had fallen, owing to the practical dissolution of the Glass Trust. In general, this trade has been rather slow the last year or two, because the wet weather has held vehicles together that would otherwise have been worn out, but it is believed that the surplus stocks in the country, due to this fact, have been largely absorbed, and that business will be excellent from now on. Pump makers have had a sorry time of it the last two years, and the same is true of Wind Mill manufacturers. Rapidly increasing costs of labor and materials that enter into these devices came at a time when the demand suddenly fell off, owing to two successive wet summers. These two lines particularly thrive with the farmer's misfortune, and the greatly increased wealth of the farming West, due to the raising and harvesting of copious crops under propitious weather conditions, has been reflected in the discomfiture of interests that thrive with drouths. would be severe to say that these manufacturers are praying for dry weather, but they would like to have it a little dryer than it has been for the last two years. increasing number of Pumps is being sold each year through the Hardware dealer, and when weather conditions are favorable to the sale of Pumps the Hardwareman may count upon a good business at satisfactory profits in these lines.

# NOTES ON PRICES.

Wire Nails.—The present production by the largest interest is not up to the current demand, which continues very active, resulting in the capacity being sold weeks in advance. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers,	carload	lots		 	\$1.90
					1.95
Retailers,	less th	an carload	lots	 	2.05

New York.—The demand for small lots from store shows a marked increase over that of the previous month. The market is firm in tone, at the following quotations: Single carloads, \$2.05; small lots from store, \$2.15.

Chicago, by Telegraph.—Business continues to be brisk, the leading producer stating that their capacity is sold many weeks ahead. Prices remain unchanged, as follows: Carload lots to jobbers, \$2.05 per 100 pounds, Chicago; less than carload lots, \$2.15; car lots to retailers, \$2.10, all f.o.b. Chicago.

Pittsburgh, by Telegraph.—In view of the heavy demand, the fact that some mills are already behind in shipments, and a probable car shortage, which is already developing, would indicate that an advance in the prices of Wire Nails during this month is altogether likely. The mills are entering very heavy orders, and are urging customers to send in specifications as fast as possible, as there will probably be a shortage in supply before long. The market is very firm, and prices are being rigidly held. We quote Wire Nails at \$1.85, in carloads to jobbers; \$1.90, in carloads, to retailers, and \$2, in small lots,

to retailers, all f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days, plus actual rate of freight to point of delivery.

Cut Nails.—Prices were reaffirmed for the month of February by the Cut Nail Association at their meeting last week. Demand has increased, and a number of large orders have been booked by the mills. Quotations on Steel and Iron Nails, in all quarters, are as follows: \$1.70, base, in carloads, and \$1.75 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination; terms, 60 days, less 2 per cent. off in 10 days.

New York.—There is a noticeable increase in demand over that of last month, although requirements are still moderate. Quotations are as follows: Carloads on dock, \$1.84½; less than carloads on dock, \$1.92½; small lots from store, \$2.

Chicago, by Telegraph.—The leading manufacturers report that a better feeling characterizes the market for Cut Nails than for some time. The demand is considerably better and on the increase. Manufacturers made no changes in prices at their meeting last week. Cut Nails are sold to jobbers at \$1.86½, base, per 100 pounds, in car lots, Chicago, and \$1.91½ to retailers. Small lots from store are sold at \$2.10.

Pittsburgh.—The Cut Nail Manufacturers' Association met on Thursday, February 4, and reaffirmed prices for February shipment. There has been more or less shading in prices of Cut Nails, but we understand that it is the purpose of the manufacturers to hold prices firmly in the future. Some Cut Nail mills are reported as discarding freight rates in Tube Rate Book and sell f.o.b. at mill, or charging full freight rates. Demand for Cut Nails is more active, and some good sized orders are being placed. We quote Steel and Iron Cut Nails at \$1.70, base, in carloads, and \$1.75 in less than carloads, f.o.b. mill, terms 60 days, less 2 per cent. off in 10 days.

Barb Wire.—The demand continues to be large; so much so that the utmost effort is being put forth by the mills to prevent an accumulation of unfilled orders, which would prevent seasonable shipments. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	\$2.20	\$2.50
Retailers, carload lots	2.25	2.55
Retailers, less than carload lots		2.65

Chicago, by Telegraph.—Both the leading and independent producers state that they are crowding their mills to the utmost in order to keep pace with the demand, and in the effort to prevent an accumulation of orders beyond their capacity to fill seasonably. We quote as follows: Painted Barbed Wire, \$2.35 per 100 pounds, f.o.b. cars, Chicago, to jobbers; Galvanized, 30 cents higher. Prices to retailers 5 cents per 100 pounds higher than to jobbers in car lots and 15 cents in less than car lots; Staples, \$2.20, Chicago, for Plain, and \$2.60 for Galvanized to jobbers, with 5 cents advance to retailers.

Pittsburgh, by Telegraph.—Demand is excessively heavy, especially from Southern points, and the mills are entering very large orders. A shortage in supply of Barb Wire at an early date seems likely, and the tone of the market is very strong. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days:

				Painted.	Galv.
Jobbers, c	arload	lots		 \$2.20	\$2.50
Retailers,	carload	l lots		 2.25	2.55
Retailers.	less the	an carload	lots	 2.35	2.65

Smooth Fence Wire.—A heavy tonnage has been booked by mills, which are running full time. Quotations are as follows, f.o.b. Pittsburgh; terms, 60 days, or 2 per cent. discount for cash in 10 days:

	earloads																					
Retailers,	carloads	0	0	0	0	 	0		0	0	0			0		0	0	0 0	 	. 4	 1.90	
Less than	carloads		_	_				_					 _		_	_					2.00	

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

 G to 9
 10
 11 12&12½ 13
 14
 15
 16

 Annealed....Base.
 \$0.05
 .10
 .15
 .25
 .35
 .45
 .55

 Galvanized...\$0.30
 .35
 .40
 .45
 .55
 .65
 1.05
 1.15

Chicago, by Telegraph.—As far as can be learned, every Wire mill in the West is running full time, with full order books and with no prospect of a decrease in prices, to say the least. Quotations are as follows: Base sizes, 6 to 9, \$1.95 per 100 pounds in car lots to jobbers, f.o.b. Chicago; \$2 per 100 pounds to retailers in car lots, and \$2.05 in less than car lots.

Pittsburgh, by Telegraph.—Demand continues heavy, and is taxing the utmost capacity of the mills to meet. An advance in prices this month is likely. We quote as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days. Plain Wire, \$1.80, base, for Nos. 6 to 9, in carloads to jobbers, and \$1.90 to \$1.95 in small lots to retailers; Galvanized, 30 cents extra for Nos. 6 to 14.

Set and Cap Screws.—The understanding which has existed between the manufacturers of Set and Cap Screws has terminated, and the market is now an open one. As a result of this condition of things prices are somewhat irregular and materially lower.

Horseshoes .- Under date of February 6 revised quotations on Horse and Mule Shoes are announced by the manufacturers, the new price for Iron Shoes being based on \$4 per keg, f.o.b. Pittsburgh, and for Steel Shoes, \$3.75 per keg, f.o.b. Pittsburgh. Extras and terms of payment and delivery remain unchanged. While this is an advance of 15 cents in the regular announced price of the goods there has been a corresponding increase in the rebates given to purchasers of 2000 and 1000 kegs during the calendar year. The price thus realized by the manufacturer is unchanged. It is, however, intimated that the rebates are to be given only when earned, and to be contingent upon the buyer taking into stock 300 kegs during the year. The manufacturers also express the hope that the jobbers will not divide any part of the rebate with their customers, but maintain the regular price as announced above.

Axes.—The past week has been a busy one with the manufacturers and those largely interested in the Axe market. The announcement made in our last issue of the association formed for the regulation of production and prices was received by the trade at large with much interest, especially in view of the effort which is thus being made to put this line on a more satisfactory basis and correct abuses of long standing in the trade. The manufacturers are gradually getting out their price-lists and formal announcements of the new quotations and conditions, and entering into correspondence with their customers. While there is a general approval of the lines on which the manufacturers are now working, there is naturally an effort being made by jobbing houses to look after their own interests and place orders as advantageously as possible, including, in many cases, arrangements for the supply of their special brands. Some objection is made in some quarters to having special brands the same price as factory brands, instead of 25 cents per dozen less, as heretofore. There is, however, a general recognition of the fact that the new basis is a reasonable one and will be for the general advantage of the trade, tending to keep up the quality of special brands and at the same time to discourage somewhat their sales as against factory brands. A good deal of attention is being given to the compilation of the classified lists of buyers, which, while substantially completed some days ago, has not even yet been put in final form and given to the manufacturers for their guidance in making prices. The action taken by the manufacturers, in making prices vary according to the weight of goods instead of having a uniform price of all weights as heretofore, is recognized as eminently fair, and when put into effect will doubtless work advantageously. For the information of our readers we give below the various groups into which Axes, according to their weights, are divided. It will thus be seen that for all weights of Axes. not included in the "Base Group," extras varying from 25 cents to \$3.25 per dozen are charged. The official schedule of weights is as follows:

- BASE GROUP.—Base Weights: All 2 pounds, or 2½ or 2½ or 2¾ or 3 or 3¼ or 3½ pounds, or assorted as follows: 2 to 2¼, 2 to 2½, 2 to 2¾, 2 to 3, 2 to 3¼, 2 to 3½, 2½ to 3½, 2½ to 3½, 2½ to 3½, 2¼ to 3½, 2½ to 3½, 2¾ to 3½, 3½ to 3½ Total Weight not over 42 pounds.
- GROUP 2.—25 Cents Per Dozen Extra: All 3¾ pounds or 4 pounds, or assorted as follows: 3 to 4¼, 3 to 4½, 3¼ to 4, 3¼ to 4¼, 3¼ to 4½, 3½ to 3¾, 3½ to 4, 3½ to 4½, 3½ to 4½, 3½ to 4, 3½ to 4½, 3½ to 4, 3½ to 4½, 3½ to 4, 3% to 4½,—Total weight not over 48 pounds.
- OUP 3.—50 Cents Per Dozen Extra: All 4½ pounds or 4½ pounds, or assorted as follows: 3½ to 4¾, 3½ to 5, 3¾ to 4½, 3¾ to 4¾, 3¾ to 5, 4 to 4¼, 4 to 4½, 4 to 4¾, 4 to 4¾, 4 to 4¾, 4 to 4¾, 5, 4½ to 4¾, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, 4½, 5, GROUP
- GROUP 4.—75 Cents Per Dozen Extra: All 4¾ pounds or 5 pounds, or assorted as follows: 4 to 5¼, 4 to 5½, 4 to 5¾, 4 to 6, 4¼ to 5, 4¼ to 5¼, 4¼ to 5½, 4¼ to 5¾, 4¼ to 6, 4½ to 4¾, 4½ to 5, 4½ to 5¼, 4½ to 5½, 4½ to 5¾, 4½ to 5¾, 4½ to 5½, 4½ to 5¾, 5¾, 4½ to 5½, 4½ to 5½, 4½ to 5¾, 4½ to 5½, 4½ t
- GROUP 5.—\$1 Per Dozen Extra: All 5¼ pounds or 5½ pounds, or assorted as follows: 4¾ to 5½, 4¾ to 5¾, 4¾ to 6, 5 to 5¼, 5 to 5½, 5 to 5¾, 5 to 6, 5¼ to 5½, 5¼ to 5¾.—Total weight not over 66 pounds. No Axe over 6 pounds.
- GROUP 6.—\$1.25 Per Dozen Extra: All 5¾ pounds or 6 pounds, or assorted as follows: 5¼ to 6, 5¼ to 6¼, 5¼ to 6½, 5½ to 5¾, 5½ to 6, 5½ to 6½, 5½ to 6½, 5¾ to 6, 5¾ to 6¼.—Total weight not over 72 pounds. No Axe over 6½ pounds.
- GROUP 7.—\$1.75 Per Dozen Extra: All 6¼ pounds or 6½ pounds, or assorted as follows: 5¾ to 6½, 5¾ to 6¾, 5¾ to 7, 6 to 6¼, 6 to 6½, 6 to 6¾, 6 to 7, 6¼ to 6½, 6¼ to 6¾.—Total weight not over 78 pounds. No Axe over 7 pounds.
- GROUP 8.—\$2.25 Per Dozen Extra: All 6¾ pounds or 7 pounds, or assorted as follows: 6¼ to 7, 6¼ to 7¼, 6¼ to 7½, 6½ to 6¾, 6½ to 7, 6½ to 7¼, 6½ to 7½, 6¾ to 7, 6¾ to 7¼.—Total weight not over 84 pounds. No Axe over 7½ pounds.
- GROUP 9.—\$2.75 Per Dozen Extra: All 7½ pounds or 7½ pounds, or assorted as follows: 6¾ to 7½, 6¾ to 7¾, 6¾ to 8, 7 to 7¼, 7 to 7½, 7 to 7¾, 7 to 8.—Total weight not over 90 pounds. No Axe over 8 pounds.
- GROUP 10.—\$3.25 Per Dozen Extra: All 7% pounds or 8 pounds.

Roofing and Building Papers.—One of the customary results of combinations that place an abnormal profit on a line of goods is observable in Building and Roofing Papers, the last general agreement on prices having been made over a year ago. For instance, current prices in metropolitan territory, which, broadly speaking, takes in from north of Trenton, N. J., to Westchester County, N. Y., and all of Long Island, carry a rate of \$32 per ton for single ply tarred felt in carloads, delivered, with various modifications of \$32.50 and \$33 per ton, &c., for Hudson River points and northern counties in New York. The operations of the combination, so far as they control the situation, are confined to New England, points east of a line from Rochester, N. Y., through Altoona, Pa., to the western border of Virginia, down through the South, between the Carolinas and Tennessee, &c., to the Gulf, virtually Atlantic Coast territory with its cheaper freights. West of this meridian is known in the trade "open territory," in which competition has resulted as in making the following prices, viz.: Two ply tarred paper, % pounds, per roll, 40 cents; 40-pound rolls, two ply, 45 cents per roll; three ply, 55 pounds per roll, 60 cents, and 60-pound rolls, three ply, 63 cents per roll. Single ply Roofing Felt per ton, \$25; Slater's Felt, \$28 per ton, and rosin sized Sheathing, \$24.50 per ton. The 35 and 55-pound rolls are not put up for the controlled market, but indicate that the flerceness of the competition in the Middle West, after cutting the price on standard weights, has now attacked the weight of the roll, although the price is proportional. Portions of Eastern Pennsylvania, on the other hand, dominated by the combination pay up to \$37 per ton, delivered, for single ply felt, while in Pittsburgh, which is open territory, we understand a price of \$24 a ton is made.

-The Rope market continues in about former Cordage.condition, with demand seasonable and the market steady. Quotations on the basis of 7-16 inch diameter and larger are as follows: Pure Manila, 111/2 cents; second-grade Manila, 1/2 to 1 cent per pound lower; Pure Sisal, 91/4 cents; Mixed Sixal, 8 cents per pound. These quotations are subject to a rebate of 1/4 cent per pound to carload buyers.

Glass.-Manufacturers are reported as endeavoring to stiffen up prices, and are asking about 5 per cent. advance on former quotations. Jobbers are not inclined to stock up in absence of demand, though they may recognize the possibility of a scarcity of Glass later. The Glass Workers' Association have succeeded in closing some factories where the agreed scale of wages is not paid. It is estimated that between 800 and 1000 pot productive capacity is in operation, out of a 4000 pot capacity. Local jobbers are trying to maintain quotations of 90 and 10 to 90 and 20 per cent. discount from the jobbers' list of December 16, 1902.

Binder Twine.-A large amount of business is reported to have been booked in the West, in the shape of no price orders, while some concerns are quoting prices and inserting them in contracts, when requested to do so. It is understood that 101/2 cents per pound for Sisal, and Standard, in small lots, is quite a common quotation, though prices down to 1/2 cent less have been made.

Oils.-Linseed Oil.-A limited amount of business is being done, and that is mostly confined to orders for small lots. In this territory it appears as if buyers would follow the market from day to day, rather than place orders for large quantities. Quotations are as follows: City Raw, in lots of five barrels or more, 42 cents; in lots of less than five barrels, 43 cents per gallon; State and Western Raw, 40 to 41 cents per gallon, according to quantity. Boiled Oil, the usual 2 cents advance per gallon over Raw. Quotations of State and Western are somewhat nominal, as 39 cents is obtainable for small

Spirits Turpentine.—Prices have advanced 21/2 cents during the week, and buyers have been holding off, except for immediate requirements, which are light. market at this point is firm, owing, it is understood, to stocks being in strong hands, as demand scarcely warrants such a condition. Quotations, according to quantity, in this city are as follows: Oil barrels, 661/2 to 67 cents; machine made barrels, 67 to 671/2 cents.

# HENRY DISSTON & SONS.

H ENRY DISSTON & SONS, Philadelphia, have issued their catalogue for the current 200 pages of which their extensive line of manufactures is shown. Changes in prices of the following goods are noted: Solid Tooth Circular Saws, Resawing Edger and Top Saws, Shingle Saws, Shingle Saw Flanges, Screw Slotting Cutters, Metal Slitting Saws, Hand Ice Saws, Triumph Great American Cross Cut Saw, One-man Cross Cut Saws, Swages, Monarch and Triumph Saw Sets, Wire Gauges, Band Saws, D. 100 Hand Saws, Combination Hand Saws, Square Hole Saws, No. 2 Compass Saw Blades, Wood Saw Blades, Wood Saws, complete; Wood Saw Rods, Kitchen Saws, No. 2 Bevels, No. 1 Try Square, No. 1 Bevel, Screw Drivers, Pocket Levels, Plumbs and Levels, Plumb Bobs,

New goods added to their line are as follows: Nos. 1 and 2 Great American Cross Cut Saws, Oriole and Novo Cross Cut Saws, Triumph Toledo Cross Cut Saw, Band Saw Swage, Screw Press, Hand Saw Jointer, Nos. 82, 86, 90 and 91 Hand Saws, No. 10 Keyhole Saw and Pad, Coping Saw, No. 15 Pacific Coast Pruning Saw, Ideal Wood Saw Rod, No. 16 Porter House Butcher Saw, No. 25 Hack Saw Frame, Drop Handle Rail Hack Saw, Sure Grip and Western Plastering Trowels, No. 11 New York Brick Trowels, Sure Grip Brick Trowels, Steel Saw Screws, nickel plated; Nos. 23 and 30 Steel Squares, No. 11 Miter Squares, Carpenters' and London Screw Drivers, Shafting Levels, Nos. 51/2, 091/2, 91/2 and 26 Levels.

GRAY & DUDLEY HARDWARE COMPANY, Nashville, Tenn., who are large distributers of ammunition throughout the South, advise us that they have decided to sell, hereafter, the goods made by the Peters Cartridge Company, exclusively.

# Trade Organizations.

THE following meetings of State Retail Hardware associations are announced:

Colorado, February 15, Denver. Indiana, February 16, 17, 18, Indianapolis. Pennsylvania, February 16, 17, Williamsport. Illinois, February 23, 24, East St. Louis. MISSOURI, February 23, 24, St. Louis. Оню, February 23, 24, 25, Cleveland. MINNESOTA, February 24, 25, 26, St. Paul. KENTUCKY, March 1, 2, Louisville. CONNECTICUT, March 2, New Haven. CALIFORNIA, March 2, 3, San Francisco. NEW YORK, March 8, 9, 10, Rochester. NATIONAL, March 15, 16, 17, Indianapolis, Ind. Indian Territory, May 10, Oklahoma City.

ARKANSAS, June 14, 15, Little Rock. MICHIGAN, August 10, 11, Grand Rapids.

### Connecticut State Association of Retail Hardware Dealers.

Charles L. Way, Hartford, secretary of the Connecticut State Association of Retail Hardware Dealers, issues the following circular, which has been mailed to every Hardware merchant in the State. It will be observed that the annual meeting is announced for Wednesday, March 2, at New Haven, the headquarters being at Heublein's:

The first annual meeting of the Connecticut State Association of Retail Hardware Dealers will be held on

Wednesday, March 2, at New Haven. The headquarters will be at Heublein's, on Church

street, opposite the New Haven Green, and the morning session will be called to order at 10.30.

At 1 o'clock a lunch will be served, at 75 cents per plate, and the afternoon session will be held immediately

afterward.

afterward.

It is hoped that there will be a large attendance at this, our first annual gathering, and the members are urged to exert themselves to enroll new members and bring them along. These gatherings are important to the interests of the retail Hardware trade, and are of as much importance to attend as the receiving of a large order for goods at a good profit. The Hardware merchants should know each other personally, and how better can they do this than by these annual gatherings? Come one! Come all! and bring all your enthusiasm with you.

one! Come all! and bring all your enthusiasm with you.

Mr. Corey or Mr. Bogardus of the National Association will be with us and give us the benefit of their large experience. Do not fail to be present to hear what they

In order that the committee having the arrangements in charge may know what to expect, it is essential that the members notify the secretary, on the inclosed postal card, how many of each firm will be present. Please have

these in the hands of the secretary by February 26.

In order that the members may be prepared with matter for discussion, it would be a good plan for each one to look into the matter of the Parcels Post bill, the matter of Hardware Dealers' Mutual Fire Insurance, and also any complaints or suggestions which would properly come before our association.

Let us have a large and enthusiastic meeting.

### Indiana Retail Hardware Dealers' Association.

A very interesting programme has been prepared for the fifth annual convention of the Indiana Retail Hardware Dealers' Association, at Indianapolis, Denison Hotel, February 16, 17 and 18. Among the formal addresses will be the following:

"A Survey," by Z. T. Miller of Chicago, ex-president

of the National Retail Hardware Dealers' Association.

"Better Freight Transportation," by a representative of the Indiana Grain Dealers' Association.

"Has an Association Membership a Dollars and Cents Value?", by Daniel Stern, Chicago.

"Adoption of Metric System," by J. B. Gohmann, Indianapolis.

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The Science of Salesmanship," by A. F. Sheldon, Chicago.

"Observations," by W. P. Lewis, New Albany.
"Necessity and Advantage of Local Associations," by
A. N. Shidler, South Bend.
"Evolution of Trade," by J. A. Shapker, Mount

Vernon.

"Adding Specialties and Side Lines," by Louis C. Bartholomew, Michigan City.
"Hardware Business in a Country Town," by C. A.

Ellis, Carlisle.
"The Influence of Local Newspapers, and Why
Should Cultivate It," by T. J. Lindley, Jeffersonville and Why We

In addition there will be a number of informal talks by manufacturers and jobbers and their traveling representatives, and, of course, a good deal of general discussion. A smoker will be given on Tuesday evening.

### Kentucky Retail Hardware and Stove Dealers' Association.

The fourth annual meeting of the Kentucky Retail Hardware and Stove Dealers' Association will be held at Liederkranz Hall, Louisville, on March 1 and 2. The official programme has not yet been determined.

# DEATH OF HENRY A. CAVNAH.

FTER an illness of three months, from nervous prostration, Henry A. Cavnah, president of the Bucher Gibbs Plow Company, Canton, Ohio, died on the 26th ult. at his home in that city. Mr. Cavnah was born in Canton on June 22, 1843. He saw gallant service in the Civil War, and at its close entered furniture manufacturing with his father and brother. About 1874 he became identified with the Bucher & Gibbs Plow Company as bookkeeper, and ten years later was made secre-Subsequently he was elected general manager, and two years ago became president of the company. Mr. Cavnah took a conspicuous part in promoting the industrial welfare of Canton, and was also president of the Canton Foundry & Machine Company, vicepresident of the Stark Telephone Company and director of the Savings & Loan Company.

# AMONG THE HARDWARE TRADE.

The Frank Lynch Company have been incorporated at Casselton, N. D., to take over the farm machinery business of Frank Lynch, established by him in 1882, and maintaining branch offices at Fargo and Chaffee, N. D. The incorporators and sole stockholders are Frank Lynch, G. A. Lynch and R. C. Kittel. Frank Lynch is president and Mr. Kittel secretary and treasurer of the company.

The M. T. Carnahan Company, Loogootee, Ind., have just moved into a fine new building, built to replace their store burned a year ago. The store proper has two stories, with floor space of about 10,000 square feet. They also have a wood factory capable of furnishing anything from lumber to the trim for a residence. The company are capitalized at \$50,000, and were organized January 1, 1899. They deal in General Hardware, Stoves, Buggies and Carriages. Grain and Seeds, have a Harness factory, department for plumbing, gas, steam and water pipe fitting, Farming Implements, roofing and general repair shop, besides handling pianos, organs, sewing machines. They also have a large business at Washington, Ind.

Winchester & Willard, dealers in Hardware, Saddlery, &c., 578 Mission street, San Francisco, Cal., dissolved partnership on the first inst. G. A. Willard has retired, and Fred. P. Winchester will continue the business under his own name at the old stand.

A new firm, under the style of Shoffner & Dannaher, are just opening up in business in Birmingham, Ala., the store being located at 1907 Third avenue. They handle Hardware, Cutlery, Mechanics' Tools, Builders' Supplies and House Furnishings at wholesale and retail.

Atwater Hardware & Machine Company, Atwater, Minn., have succeeded Martin Olson in the Hardware, Farm Machinery and furniture business. Mr. Olson is president of the new company. Later the company will probably take up the sale of lumber.

# FOUR PAPERS ON ADVERTISING.

BY MARSHALL DE MOTTE.

The subjects are not treated in any abstract way, but considered practically, with special reference to newspaper publicity, such as can be used by an ordinary Retail Hardware Merchant.

### FIRST PAPER-WHAT IS YOUR ADVERTISEMENT?

YOUR AD. IS YOUR SALESMAN.

First, last and always, your advertisement is your salesman, working outside your store to send people into it to buy specific items of merchandise. There is no possibility of this position being assailed, for all must admit that this is just what is hoped to be attained from all efforts along this line. So I say it is your salesman, regardless of its crudeness, the carelessness with which it may be treated, or the absolute indifference with which it may be contemptuously neglected, and therefore should not be classed above or below your other salesmen, for as you judge your ad. you must judge the rest of your force.

# DIFFERENCE BETWEEN ADS. AND SIGNS.

Without consulting the hair splitting differences found in dictionaries, and in order to have a way of understanding each other in commercial terms, I think we can safely say that an ad. is not a sign. Wouldn't you distinguish them about this way: A sign is a display in words, calling attention to a single thing or group of things, in season and out of season, without special or immediate relevancy, or without reference to immediate needs or an immediate sale, while an advertisement is intended to bring people to your store at once to secure what is generally held out to them as being an opportunity that will not occur again very soon. Your name over your store is a sign. So are the boards that one sees tacked up in any old place calling attention to John Smith, leading merchant in Podunk City. However, if these boards are used to call attention to special goods and refer to special sales they can be classed under advertising, though we won't stop to consider that class of work now, as we shall confine our attention to newspaper advertising and its auxiliaries.

#### NEWSPAPER SIGNS.

Please do not think that everything said in a newspaper about a store, and for which Mr. Merchant has paid good cash, can be called an advertisement. I recently clipped the following from a paper in an established community right here in the Middle West, where business has the best hustle found anywhere in our broad hustling land. Just look at it. It's an example of one of the commonest mistakes to be found. It was doubtless paid for as advertising, but it isn't, it is a sign. Don't

# HENRY SMITH,

BLACK BEAR LAKE.
GENERAL BLACKSMITH

Horseshoer and Wheelwright

HARDWARE, PAINT, Oil and Glass. HARNESS SUPPLIES.

TELEPHONE 36-2.

you agree with me that it would be just as legitimate to call the sign up over your door an advertisement as to call this an ad., if the definition we have agreed upon holds good? Let us agree, then, as to the difference between an ad. and a sign, and agree also that your ad. is an outside salesman, and then we can take up some of this same salesman's questions and qualifications.

### SALESMEN IN AND OUT OF STORE.

One thing must always be found: Your salesmen must agree in what they say about your merchandise. give your newest apprentice to understand that the only policy that pays is the policy of strictest honesty, that all his statements in regard to the goods must correspond with the facts, and that any laxness in this respect, even though apparently in your interest, will be frowned upon. Apply this same rule to your advertisement salesman, for I know it to be the rule of the successful, and know that it must be your rule if you seek true success, and so state it boldly. Therefore be over particular that this outside man of yours is in all statements and representations strictly and invariably honest, for people who have never been in your store will form their first opinion of you and your business from his representations, and this opinion will not be to your credit if he misrepresents, or if the fullest confidence and harmony does not exist tetween the ad. salesman on the outside and the salesmen in your store. Boasting in your advertisements is the weakest of weaknesses, and should be avoided. He should make no claims difficult to sustain, for a false impression created by a misrepresentation in an advertisement is a fatal boomerang.

# AN INCIDENT FROM HISTORY.

Fifteen years ago two concerns were doing business in similar lines here in the town in which I live. We'll call them "A" and "B." Now, at that time "A" seemed to have a little the lead in apparent investment, and was for a while popular with the shopping public, but after a short time weak business methods began to tell, it became noised around among those best of advertising media, the women, that the newspaper ads. of this concern could not be relied upon, that the values they claimed were not given, and it was remarkable how the business fell away until all was followed by a disastrous failure. It was a clear case to all who watched the rise and fall of the enterprise. The "B" business, from a smaller beginning, has risen while we young men have watched, until now it has a commercial standing of almost a million and a reputation in both the buying and selling trade for straightness in dealing and dependability in representations that is something to inspire a man with high ideals. Quite recently a man boasted to me that the magnificent success of "B" was due to constant advertising in a certain newspaper. Well, I simply recalled the story of "A" to his memory, much as I have given it to you, though he knew it well, and added that at one time "A" had been a larger advertiser in that paper than "B," so I put to him this question: "If that newspaper made 'B,' why didn't it make 'A?'
Both started using it at about the same time." It isn't where you print your ad., though you should be careful about this detail; it isn't how your ad. is set in type, though this is important. It is what you say in and through your ad. that makes or breaks. This is a fit subject for a sermonette on

# THE MAN BEHIND

Text, that wonderful aphorism, "Whatsoever a man soweth that shall he also reap." The good advertisement is a good salesman, indeed it's a mighty good salesman for a good master, but it is not the whole thing. Back of the ad. must stand the policy of the store it represents, if it represents that policy. If it does not represent the policy of the man for whom it works he will find that this sowing of wind will bring forth a crop of whirlwind.

The gist of all this is that your ad. is your salesman, indeed your best salesman, and should as nearly as possible be on a footing with your other salespeople. Above all, don't look at your ad. as a sign and so treat it, but see to it that in dress and manner as well as in honesty and faithfulness it fully sustains the reputation of your business and that your business has a reputation worth sustaining.

### **AUSTRALIAN NOTES**

FROM A SPECIAL CORRESPONDENT.

MELBOURNE, January 1, 1904.

B USINESS during December has been of fair volume,
Harvesting Tools continuing in cent rainfalls have retarded operations in a large degree, but wheat has commenced coming down to the port and the first shipment from Victoria left a few days ago per "Cambrian Monarch." The sooner the harvest is gathered in the better for all of us.

Wholesalers are still under a big financial strain through nursing accounts, and will welcome the release of the money by the wheat sales. Fencing Wire and materials are moving slowly and likely to continue so pro tem. Grass is so high in many parts that farmers will welcome the straying cattle to help keep it down. And we are getting into the "bush fire" season, when Fencing generally suffers severely.

# [Additional Tariff Decisions.]

gazetted during December, and affecting American lines, are as follows:

Tubes of rubber, metal and textile, the rubber being the principal value, 15 per cent.

Tinsmiths' Presses, for stamping out the different parts of

hand-signal lamps, 20 per cent.

Dating and Numbering Machines (for office use only), 20 per

Dating and Numbering Machines (for printers' use), free as

printing machines.
Gun Stocks (wood), 10 per cent.
Garden Forks, small, for hand only, free.
Ball Seaters (loading tools), 15 per cent.
Automatic Can Wipers, 12½ per cent.

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### Preferential Trade in New Zealand.

New Zealand, ever in the lead in experimental legislation, has struck a keynote of imperialism in a practical way. Her Parliament has just passed a "Preferential Trade Act" in favor of British made goods, an act which is likely to affect American exports to New Zealand. The three schedules of the act, in so far as they relate to Metal and Hardware lines, are given below. It will be noted that 50 per cent. preference is given to British goods over those imported from foreign countries, and on what have hitherto been "free" lines a 20 per cent. duty is imposed on the foreign article, the British remaining free. The act will come into force on

In the first schedule the only item is cement, per barrel, duty on British, 2 shillings; duty on foreign, 4 shil-In this line the duty on the foreign article is lings. doubled. Your correspondent cannot vouch for your exports of this article to New Zealand, but thinks that, like American exports of the article to Australia, "there ain't none:" so the impost won't hurt you.

In the second schedule 50 per cent. extra is imposed on foreign imports of goods already dutiable. And here

American goods figure largely:		
	Duty on British.	Duty on foreign.
Bicycles, Tricycles and like vehicles;		
also finished or partly finished, or machined parts of same, n.o.e., in- cluding weldless steel tubing, cut to short lengths.		30 per cent.
Candles, per pound	1 penny.	11/2 pence.
Carriages, Carts, Drays, Wagons, Per-		
ambulators, and wheels for same	20 per cent.	30 per cent.
China. Porcelain, Parian Ware	20 per cent.	30 per cent.
Clocks	20 per cent.	30 per cent.
Cordage and Rope, n.o.e	20 per cent.	30 per cent.
Earthenware, Stone Ware and Brown		
Ware	20 per cent.	30 per cent.
Fancy Goods and Toys	20 per cent.	30 per cent.
Firearms (all kinds)	20 per cent.	30 per cent.
Furniture and Cabinet Ware, n.o.e., and		
other than iron		37% per cent.
Glass, crown, sheet and common win-		
dow, per 100 superficial feet	2 shillings.	3 shillings.
Glassware; also plate glass and glass polished, colored and other kinds		
n.o.c., globes and chimneys for lamps	20 per cent.	30 per cent.
Hardware, Ironmongery and Hollow Ware	20 per cent.	20 ner cent
Iron Nails, per cwt		3 shillings.
Iron Pipes and fittings for same, in-	~ ammings.	o antitings.
cluding main cocks	5 per cent.	7% per cent.

Lamps, Lanterns and Lamp	Wicks 2	20 per cent.	30 per cent.
Pianos	9	20 per cent.	30 per cent.
Paperhangings	1	5 per cent.	221/2 per cent.
Plate and Plated Ware		20 per cent.	30 per cent.
Pumps and other apparatus	for raising		

water ..... 20 per cent. 30 per cent. In the third schedule a duty of 20 per cent, is imposed on the foreign article, hitherto free. The British remains free. This schedule covers Bicycles and Bicycle Fittings -viz., Rubber Tires, Pneumatic Tires and Pedal Rubbers, Outside Covers and Inner Tubes, Rubber and Cork Handles; also Drop Forgings and Stampings, Ball Bearings, Weldless Steel Tubing in full lengths, Rims, Forks and Spokes in the rough; Gas and Oil Engines, Iron and Steel Cordage, Iron, plain black sheet, rod, bolt, bar and plate; Rails for railways and tramways, Sail Cloth,

Section 8 of the Act embodies the working regulations, under which full duty will be charged on all goods, unless the importer can produce a complete certificate to prove that the goods are the product of British dominions, and providing penalties for false declarations.

Sections 12 and 13 give power to the Government to enter into agreements with British dominions or foreign countries for the reduction or abolition of duties affecting New Zealand producing or manufacturing interests.

The act is a strongly direct affirmation of the imperialistic spirit. Commercially considered, however, it is questionable if the result will mean much more than an increased customs revenue for the colony.

#### LAMPS.

In Lamps, for instance, the imports during 1902 into New Zealand were of the value of £22,000, of which £10,000 were direct importations from foreign countries; £10,000 worth came from Britain and £2000 worth from Australia. Now it is absolutely certain that the £2000 worth from Australia were merely trans-shipments, for we have no Lamp factories here. It is quite within probability that some of the £10,000 worth from Britain included Lamps of foreign make shipped via London. So on these figures, "foreign" Lamps form more than half the total trade. English makers seem to have lost their opportunities by not going in more extensively for center draft Lamps. It won't pay them to do so now merely for the sake of New Zealand, and the foreign (chiefly American) Lamp will continue in favor at an increased price to the public. The Miller Lamps, for instance, are almost as well known as Pears' soap. So in this item tne preferential spirit will merely mean (for the present at any rate) additional taxation.

### THE SAME RESULT

will be attained in many other cases. In Hardware (comprehensive term!) foreign imports were £57,000, as against over £200,000 British. This presumably includes such lines as Saws, Files, Hammers, &c., in which American names are often insisted on. Price is generally the nrst kind of patriotism. But value always beats it. And in the above mentioned (and some other) lines America has acquired pride of place.

### CLOCKS.

New Zealand (also in 1902) took nearly £9000 worth of foreign Clocks, as against £4000 worth of British. And an extra 10 per cent. duty on the foreign will not decrease the popularity of the found-in-every-household ...nsonia article.

### PUMPS.

Foreign Pumps of the value of £5500 were imported, while the British article showed a value of £2000 only. America figures largely here with Pumps of the Deming and other well known makes. To insure benefit to the British manufacturer

# MORE DISCRIMINATION

should have been shown in the adjustment of the duties. Experience of the working of the act will doubtless lead to amendments, and as a legislative experienment "down under" it will be worth watching, especially so in view of the possibility of the larger market of Australia adopting some similar scheme.

# Nebraska Retail Hardware Dealers' Association.

THE third annual convention of the Nebraska Retail Hardware Dealers' Association was opened at the Commercial Club rooms in Omaha on Tuesday morning. The first session was devoted to registration, payment of dues and initiation of new members, and the results were very gratifying, over 110 signing the record. Other preliminary work necessary for the afternoon and succeeding sessions was also completed.

# TUESDAY AFTERNOON SESSION.

The afternoon session was called to order about 2 o'clock by the president, C. A. Peterson of Oakland. The invocation was by Rev. T. V. Moore. President Peterson then introduced Mayor Moores of Omaha, as follows:

I take great pleasure in announcing that we have with us to-day a man with whom you are more or less acquainted—one who has had the honor to represent the city of Omaha in its highest executive office for a considerable length of time. He is a man who is not only held in the highest esteem by the people of the city of Omaha, but is loved by the citizens of the State of Nebraska. He has kindly consented to meet with us here to-day and to say a few words of welcome. Gentlemen of the convention, I wish to introduce to you Hon. Frank E. Moores. Mayor Moores spoke as follows:

Ordinarily this might be a hard meeting for me to address, but my friend, the Rev. T. V. Moore, has started in and given you a heartfelt prayer, and a convention or body of men that are so wise as to have their proceedings opened by prayer bespeaks for them that they are on to their job and know their business. The city of Omaha is in the State of Nebraska, as you all know, and what is good for Omaha is good for the State of Nebraska, and what is good for the State of Nebraska is good for Omaha. We are glad to see you with us to-day. Now, gentlemen, the town is yours, and you can have everything in sight but our auditorium. That isn't finished. Rain goes through the roof, and I am sure you would not care for that, but the next time you come to Omaha we will have our auditorium finished, and we will give you a good time if you come here again.

C. K. Lawson of Grand Island responded appropriately to the Mayor's welcome.

A few minutes' recess was then taken, during which time the members were given another opportunity to register and pay dues. President Peterson then delivered his annual address, as follows:

# President Peterson's Address.

It is with extreme pleasure and satisfaction that I am permitted by good fortune to extend to all my greeting and congratulations on this third annual meeting and upon the conditions that have made it possible. The seeming interest displayed by our members, as evinced by the attendance, is conclusive evidence that these annual gatherings are eagerly looked forward to with the consciousness of self-betterment and business helpfulness, and where we can congregate together and enjoy the hospitality and social intercourse of brother retail Hardwaremen, and to exchange business ideas and go home feeling within us that we have been benefited, resting assured that the next year will be full of good things and increased prosperity.

# THE VALUE OF BUSINESS FRIENDSHIP AND INTERCOURSE

cannot be estimated. The better we know each other, and the more we are acquainted with each other's business methods, the more will these be conducive to a more harmonious understanding and business friendship. I am sure that all who attended last year's meeting at Lincoln came away feeling better and feeling greatly enriched by the many things of business importance there heard, spoken by our successful brethren and fellow Hardwaremen, and departed with a heart full of tender mercies for our immediate competitors.

### THE PURPOSE OF COMMERCIAL ORGANIZATION

is not solely a mercenary one or one to maintain better prices or increase the volume of business, but has its social and moral part, a part which will bring into being and stimulate our better natures, a part which reminds us that we must be friends and sociable in our business relations though we be competitors, a part which will remove all distrust of our fellow Hardwaremen and dissipate the last vestige of unfair methods to get trade and prestige.

Some are inclined to think that war is a necessity between competitors. I refuse to believe this and believe as it was once said, "War is hell," and that the warriors are the only losers. Though business war seems inevitable betimes, it can be averted by a

### CONSCIENTIOUS REGARD FOR THE RIGHT

and a feeling of brotherhood toward our fellow man.

By all reports the ensuing year is to be a prosperous one for the Hardware trade, and let us all make hay



PRESIDENT PETERSON.

while the sun shines and take care that in the end the ends will meet. Let us uphold our glorious State. Let us spread her worth and let us push our association to tne betterment of all concerned.

Our secretary surely should be commended upon his work, which has surely been a burden to him, as his own business at home is all we can expect of him. I surely feel indebted to Mr. Hall for his work during the past year, while I have been your president, and sincerely hope that the association may always be blessed by such a secretary. With many wishes for the welfare of this association and noping that all may do all in their power to foster the interests of this association, I bid the association God-speed and the retail trade an unprecedented prosperous year.

The roll was next in order, but was deferred until Wednesday morning. Various convention committees were then appointed. The president announced that a few minutes would be open for general discussion.

### Traveling Salesmen as Honorary Members.

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H. Veith of Lincoln offered a resolution in favor of the admission of traveling salesmen as honorary members of the association. This met the favor of the convention, and was followed by responses from several traveling representatives present, among them Lloyd Scruggs of Lee-Glass-Andreeseen Hardware Company. Omaha; E. L. McBride of Ringen Stove Company, St. Louis; Chas. Smith of Chas. Smith Company, Chicago.

W. M. Glass of Lee-Glass-Andreeseen Company, Omaha, then addressed the convention. Mr. Glass said: I do not care to take up much of your time. I used

I do not care to take up much of your time. I used to be a traveling man myself, and I believe that the traveling men are your best friends to-day, and I am glad to see your organization take this action with reference to bringing in the traveling men as honorary members. I feel that their aid and assistance will materially help you build up your organization. We all want to see the Nebraska Association one of the best in the country, and I want to assure you, as far as our company and men are concerned, we will give you all of the assistance we possibly can, and help you to build up your organization.

The president appointed Albert Degner, Norfolk, as sergeant-at-arms, and C. H. Jacks, Tecamah, assistant.

The convention then went into executive session for the purpose of hearing the minutes of the previous meeting, and the paper on Insurance, by H. J. Hall of Lincoln. After some discussion the session came to a close at 5.30 p.m.

### Banquet.

A very enjoyable feature of the first day was the banquet extended to all visiting dealers by the members of the association and jobbers of the city of Omaha. About 200 participated, and the occasion was one in which the utmost good fellowship prevailed.

### WEDNESDAY MORNING SESSION

The meeting was called to order by the president at 10 a.m. After an opportunity was given for registration and payment of dues, the meeting resolved itself into an executive session. First in order was the presentation of Secretary-Treasurer H. J. Hall's report. The report was accepted as read and placed on file.

M. L. Corey, national secretary, then addressed the meeting on the subject of the Parcels Post bill and the practical results of retail association work in the United States. General discussion by the members followed Mr. Corey's remarks. Daniel Stern of the American Artisan of Chicago gave a forcible talk along similar lines and urged the members to more united and earnest action in all association affairs.

The Chair appointed a Nominating Committee for the selection of officers for the ensuing year. The president then appointed a committee to consider the secretary's report, also a committee of three to report nomination of officers for the insurance association.

J. C. Cornell, chairman of the Insurance Committee, presented their report, which was adopted and the committee discharged.

# New Officers.

Then followed the report of the Nominating Committee on new officers. The report was adopted and the parties designated were unanimously elected, the secretary being authorized to cast the ballot. The new officers are as follows:

PRESIDENT, J. C. Cornell, Ord.

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FIRST VICE-PRESIDENT, F. D. Kees, Beatrice.

SECOND VICE-PRESIDENT, Max Uhlig, Holdredge.

THIRD VICE-PRESIDENT, A. Degner, Norfolk.

SECRETARY-TREASURER, H. J. Hall, Lincoln.

The new officers accepted the honors conferred in graceful speeches, after which the meeting adjourned at 12 o'clock to reconvene at 1.30 p.m.

# MUTUAL FIRE INSURANCE.

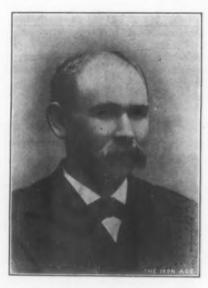
# BY J. F. GOEHNER, SEWARD, NEB.

In compliance with a request of your secretary, I take pleasure in giving to you at this time my ideas of mutual fire insurance. Having been for the last eight years connected with the Seward Mutual as an officer, I feel that I am in a condition to say something with reference thereto.

### I AM A FIRM BELIEVER IN MUTUAL INSURANCE,

as the word "mutual" implies, not for speculative purposes, but for the reason that its existence has given to all business men a cheaper rate on property insured, and I am firmly of the opinion that our present cheap rates are the result of the existence of mutual companies. The

Seward, or rather, Mutual Protective Fire Association of Seward, of which I am and have been treasurer since its organization, has never collected over 75 per cent. of the old line or board rate, and I believe that has been brought about by the fact that we have kept our expenses as low as possible, always cautious as to our risks, and thereby have caused a saving to the insurer of 25 per cent. annually, and at the same time we have increased our reserve fund each year until now we are able to pay our losses promptly and without calling on the assured for an extra assessment to pay with. We feel safe in saying to our patrons that their insurance will not cost them to exceed the 75 per cent. of board rates. I desire to say that during all of this time we have had to compete with the oldest and some of the strongest old line companies in the United States. They have never ceased a warfare against us since we organized, even going so far as to write insurance for less than the commission would be to an agent if the same had been written at regular rates. Yet through it all, by reason of having kept our expenses down, limiting the amount written on the different risks,



J. F. GOEHNER.

and by being cautious as to the risks, we are to-day in our present prosperous condition.

I desire to say that I am a firm believer in the fact that an organization on the part of the Hardware merchants of this State can be made

### VERY PROFITABLE TO EACH AND ALL,

only, however, by the securing of able, competent and honest men to handle the business for us, and then at simply living wages, the proposition being not a money making but a money saving undertaking. Not being in the habit of either writing or talking for the benefit of the general public, I will therefore desist from occupying your time further, trusting that possibly in my weak way I may have done some one some good. I should be pleased, however, to answer any and all questions which may have a bearing on mutual insurance companies so far as lies in my power.

# OUR COMPETITORS AND OUR PROFITS.

# BY MAX UHLIG, HOLDREGE, NEB.

The history of money getting is commerce. Henry Ward Beecher advised young men to get into debt if they could for a small amount of land in the country districts. He said, "If a young man will only get into debt for some land and then get married, these two things will keep him straight, or nothing will."

Money-making in the United States, where we have more land than people, is not at all difficult for persons in good health, but money is the most difficult thing in the world to keep. The road to wealth, says Dr. Franklin, is as plain as to the mill. It consists simply in spending less than we earn, which seems to be a simple problem, and yet we are here to-day studying the problem with earnestness of purpose.

### COMPETITION IS THE LIFE OF COMMERCE,

the germ which works the leaven of success, a factor of complexities now as never before. We meet competition with a glad hand because it inspires effort, stimulates energy and keeps one from getting into a rut. Then we face circumstances just as they are and go one better, with an eye on the "jack-pot." We scowl at competition when it antagonizes and engenders bad feeling. It seems even dangerous when the local dealer must meet the competition of organized capital combinations and trusts.

We recognize our competitor as one who is selling the same line of goods. We are rivals and opponents, both striving for the same common object, which I will liken to a game of checkers. The game is no game unless one wins out, and as we play game after game the interest broadens and develops. We find it is of no use to get angry and become passionate. One fellow cannot always win unless he is a master hand.

Much of the pleasure derived from business is found in the profits, the result of employed capital, also in the effort to increase and build trade. Both of these factors



MAX UHLIG.

can be counted as practical results, but we have other profits which are not practical, but which are great factors also, namely,

# INFLUENCE AND SUPERIOR STANDING.

In considering the best method of combining these forces in competitive strife, I invite attention:

First.—To competitors: They are not, must not and never can be enemies; quite the contrary, only the friendliest of feeling and the cultivation of business relations are conducive to profits.

Second.—Competitors must live up to a high idea of truth and charity. The other fellow is all right; learn to have faith in him and see that you live up to his standard.

Third.—Competitors must learn that their interests are mutual; what is good for one is good for the other.

Fourth.—They must plan and work together, not only to maintain standard prices, but to elevate, promote and push the welfare of our line of business.

### WHERE THERE IS A GOOD DEAL OF COMPETITION

and the gross profits on sales are at the lowest, it generally requires that four times as much be sold yearly as the stock of goods kept amounts to, to make the business profitable.

Suppose the gross profits to be 15 per cent.; four times this will be 60 per cent., which, if stock is \$10,000, will give you a total profit of \$6000. If the stock can be turned over this often at this profit and the aggregate of profit is enough to cover expenses and leave a net result sufficient to satisfy the dealer, then the problem is solved.

### THE OFTENER THE STOCK IS TURNED OVER

the cheaper the dealer can sell his goods. If he can sell five or six times the amount of his stock in a year and makes relatively as much profit on his sales as when he only sold three times his stuff, his net profits will be largely increased. The marked cost on the goods should not only be the prime cost of invoice, but should include freight as well as the per cent. it takes to do business or else there is a loss of profit.

Should a contingency arise in competition when one opponent might sell one or more articles at less than actual cost, it would be advisable to displace them from your stock until he either finds out his mistake or goes out of business. It would be utter folly to follow his lead. Such competitors generally enjoy but a brief business career.

### LEAKS IN THE BUSINESS.

Detail engrosses a good share of the attentive dealer, who sees and arrests all useless expense. Minor matters are aggregates either of expense or profit; there might be leakage or damage to his merchandise or there might be unnecessary use of fuel or lights or tools, or his employees might not give their best energy to the business. Do not confound the attentive dealer with the other one as parsimonious and exacting, whom we all condemn. The attentive dealer stops a leak in a dripping cask of oil, although by the leakage he might lose a quart. At the same time he may willingly give away the same amount in retailing to insure good measure to his customers.

#### THE OTHER EXTREME.

A dealer should be careful that he does not run into the opposite extreme and think that saving is making. Oftentimes this is done. Suppose a dealer in the rear of the store should straighten crooked nails that had been drawn from the covers of the cases in which goods came, so that they might be used again, while in plain view of him customers are standing at his counters waiting to be served. It would be economy to throw these nails into the street. The man is deceiving himself. He is really enjoying recreation at the expense of profit.

### TRUE ECONOMY

is misunderstood, and people go through life without properly comprehending the principle. It does not consist of saving cheese parings or candle ends or in cutting off two cents from the laundry bill and doing all sorts of little things. Nay! It consists in making the income exceed the outgo. There must be a margin.

# UNPROFITABLE ADVERTISING.

Profits are used oftentimes to feed poorly written advertisements. Advertising is indispensable to modern retail business, but much lies in the article to be advertised. I think it a waste of profits to simply display your business card as a general dealer in Hardware, Stoves, Tinware, &c., but advertise your specialties, explain them vigorously and keep everlastingly at it, and you will soon see the result in increased profits.

I go after profits, as Grover Cleveland goes fishing. I cast my net down in deep water, and I make sure there is no leak to let the small fry slip through. I never worry over fish I don't catch; I simply recast my net with redoubled effort.

# NEW LINES OF TRADE AND GOODS.

Conditions are constantly changing, and competition feeds more and more on the margin of profits. Then I look up new lines of trade, introduce new lines of goods, arrange attractive window displays and expand to meet the individual condition. In this competitive struggle, as I clean up a sale of seven cents' profit, my eye falls on a former customer, with Sears-Roebuck on his arm, and to win him back to grace I must meet Sears-Roebuck prices, and I claim this as profit; no one else can.

I liken competition to a wheel. The spokes are the dealers, each fitted nicely in the hub of organization, radiating outward to the rim, which is commerce; running along smoothly because well oiled with profits. Therefore, if any dealer thinks legitimate business in Nebraska is unprofitable, he is simply a spoke out of repair.

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# STORE RULES FOR CLERKS.

ROM a merchant in Nebraska handling Hardware, Stoves, Agricultural Implements, Furniture, Carpets, &c., we have the following rules which have been adopted for the government of the clerks employed in his establishment. Our correspondent refers to the code of rules as having been used by him for a number of years and covering the ground pretty well in his experience:

#### HONESTY.

Observe the strictest honesty to all concerned.

### ACCURATE WEIGHT.

Give "down" weight, but no more. On ounce too much is 1-16 of a pound, a margin of some importance.

#### CONSIDERATION FOR OTHERS.

Never speak evil of any one, least of all a competitor.

Observe the utmost kindness to every patron, rich or poor, young or old.

### GUARANTEEING OR RECOMMENDING GOODS.

Don't be too hasty in guaranteeing goods—better underrate than overrate. One recommendation from a customer is better than two from a clerk. If you know a well suited customer it is a good idea to mention his or her name, especially if the person named bears a good reputation and is popular in the community.

#### BREACH OF CONFIDENCE.

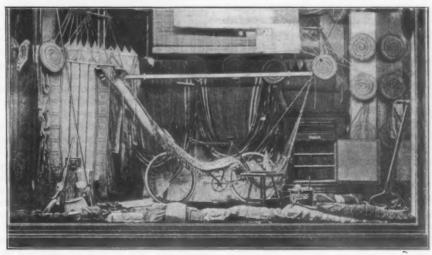
When a man employs a clerk he shows that he has confidence in the one employed. It would therefore be a breach of confidence ever to mention or refer to the private affairs of an employer, even after resigning from his employ or in the event of discharge. Breach of confidence is never honorable under any circumstances. "A still tongue maketh a wise head," and a trustworthy clerk maketh a glad employer.

### GENERAL.

These rules are framed to avoid talk or discussion, so that a rule can be referred to instantly and without any conversation. The first and fifth rules are most important. If a rule is referred to in the presence of a customer make no reply. Harmony is very desirable.

# AN EFFECTIVE WINDOW DISPLAY.

THE tastefully arranged window display of Sporting Goods and summer luxuries, which is illustrated herewith was designed by the E. N. Howell Hardware Company, Dixon, Ill. Hammocks covered the bottom and back of the window. A Hammock hung in the center, and on the stand nearby was a bottle of root beer and a saucer of ice cream. The latter attracted much attention as it did not melt, being "hard" pudding sauce, made of butter and sugar. At the foot of the stand an Ice Cream



An Effective Window Display.

### PROPRIETOR AS SALESMAN.

When the proprietor is selling, or trying to sell, anything to a customer keep away from him as much as possible, so that he may give his undivided attention to the sale. If it is absolutely necessary to approach him for information or advice, cut the matter as short as you can. During his engagement with a customer be as attentive to other patrons as possible.

# COMPLAINTS AND CLAIMS.

If a claim is made for defective goods turn the matter over to the proprietor, unless you are absolutely sure the claim is just. Never give a patron a disagreeable answer because he wants his just dues.

### ITEMIZING CHARGES.

In making charges in the day book be sure and itemize each article, number and quantity, for example: 2 kegs 10 penny Nails, 1 Eight-Inch Hasp, &c. Never enter a charge as "merchandise"; always itemize.

# KNOWING "TOO MUCH."

Be prompt, be clean and neat. Don't get smart and know too much. A customer likes a smart clerk, but not a "smart Alec."

# POWDER, GASOLINE, ETC.

Never take a lamp or lantern into the oil room. Don't sell gasoline after lamplight. Don't allow a customer to stand by and smoke while you are weighing out Powder or measuring Gasoline.

Freezer was placed. In the right rear corner was an open Refrigerator, and in the right front corner a Lawn flower. On the left hand side a Kodak, Rifle, Fishing Rod and Basket were placed.

# PARTS OF THE HUMAN BODY.

A DISPLAY showing the parts of the human body found in a Hardware store was placed in the window of H. N. Humphrey, St. Louis, Mo., some time ago. The following parts were shown by Hardware articles:

Head—of a Bolt.

Eyes-Screw Eyes.

Ears-Pail Ears.

Teeth-Rake Teeth.

Tongue—of a Wagon. Nose—of a Tea Kettle.

Neck-Yoke.

Face-Clock.

Hands-Clock.

Elbow-6-inch Stove Pipe Elbow.

Finger-Cradle Finger.

Nails-Wire Nails.

Breast-Tea Kettle Breast.

Legs-Stove Legs.

The articles were all neatly arranged, and each was marked showing what it represented. The window was arranged by D. I. Fleming and is said to have been very effective and to have produced good results.

### THE SALESMAN.

The selling of goods has become a science. It requires a certain adaptability which many do not possess. A successful salesman must have a good personality, must be a good judge of human nature, a good conversationalist. The profession to-day requires intelligent, straightforward, honorable and honest men. A field that offers good inducements to young men.

BY FRED. B. ELLSWORTH.

THERE is no field that I know of that offers a better inducement to a young man than that of representing a reliable firm in the capacity of salesman. Nor is there a field in which the opportunity for advancement

origin of the Salesman is greater, or the future prospects brighter. There was a time when almost all business transactions were consummated by means of correspondence, when

prices were quoted and the orders received by mail. But competition has become so animated and the margin of profit so much reduced that business men found that correspondence did not answer the purpose for which it was intended, and as a result almost all firms are represented by salesmen.

Formerly it required but little tact and judgment to sell goods. The ordinary, common, every day salesman was good enough. He required no particular ability, and,

One Class of Salesmen in fact, in many cases was simply an order taker, possessing but little knowledge of the line he handled. More often than not he was conspicuous as a good

fellow, well met. His clothes were loud and fastidious. Oftentimes he resembled a walking advertisement for When not attending to some tailer or haberdasher. business, he could be found posing in some hotel window or standing on the corner attempting to flirt with the women as they passed by. His nights were for the most part spent in drinking and carousing in the main bar room of the town, or else in other low pursuits. By the better class of people he was known as a traveling man; an undesirable acquaintance, fit only to associate with the sporting classes or people of his kind. This class still exist to-day on the road, but are in the great minority. They are a disgrace to a profession which is as honorable, honest and much respected as any that exists to-day. However, I am glad to say that this undesirable element is fast disappearing. One by one, their services are no longer required, and men who are gentlemen and familiar with the refinement of life take their place.

The selling of goods has become a science and requires a certain adaptability, which many do not possess. Many of our best business men who are at the head of some of the largest concerns in the country recognize this adaptability, for they are failures themselves as salesmen. I once met a man who is the president of one of the largest

manufacturing concerns in the United States. He started in life without a dol-A Science lar, went through every department of the business, until now he is practically the owner. He is one of the smartest and shrewdest men I ever met. Yet he said to me one day, "But when it comes to selling goods, I'm a dead failure. I couldn't go out and sell even a box of matches. For instance, we once had a good customer in Albany. I had never met him before, but one of our salesmen had worked up the business. One day I chanced to be in Albany and favored him with a call. As I entered his office he sat at his desk writing, and as I said 'Good morning,' he paid no more attention to me than if I had been a dog. I repeated the salutation presently, and receiving no response, began to get good and hot. Finally he turned and said in a gruff manner, 'What do you want?' Well, the result of the whole thing was there was a heated argument, in which my temper got the better of me, and we lost the man's business temporarily. That's the kind of a salesman I am, and the best joke of all, the salesman who originally secured the business eventually got it back again."

A successful salesman must have a good personality.

He must be a good judge of human nature, be a good

Qualities of a

Good Salesman

conversationalist and of pleasing address and appearance. He must have lots of diplomacy about him, and tact, and must be able to grasp a situ-

ation quickly. Above all, a predominant characteristic of a successful salesman is that of having perfect control of his temper under all ordinary circumstances.

The profession to-day requires bright, intelligent, straightforward, honorable men. The better educated they are the better it will be for them. I think this is imperative, for the business men of to-day are, as a general rule, well read and informed on almost all the general topics of the times, and many are college bred.

Nowadays the impression a salesman first makes on the people with whom he comes in contact counts for much. If it be a favorable one, and the first impressions are generally correct and lasting, he has accomplished a great deal toward paving the way to a pleasant business

relation and eventually establishing a feeling of friendship. Some people say that the transaction of business is a cold blooded business proposition—a matter

of dollars and cents. So it is from a business point of view. But at the same time a friendship, sincere and loyal, is often the result of honorable, honest, upright business dealings, and the reputation gained in this manner is sometimes worth its weight in gold, or, better yet, is priceless, for it has no value.

From a remunerative point of view a salesman can generally earn more of a salary than the average young man. One hundred dollars per month and expenses is the gen-

Remuneration

eral salary paid a salesman to start with. Most any reliable concern considers that if a man is worth anything at all he is worth that amount.

Some concerns pay less, but they belong invariably to a class that expect men to work for nothing and live on promises.

There are many bright, intelligent young men to-day who are looked upon in offices as clerks and bookkeepers, working for from \$40 to \$75 per month, or thereabouts.

Full with no chance of promotion. Many of them are incapable of doing anything better, but there are many among them worthy of a better occupation, and possessing ability for something better, and are either victims of circumstances or fail to recognize that ability.

I believe every young man should acquire a business education, such as may be obtained in the business colleges to-day, and that he should follow it up by a little

practical experience. But when a young

Business man is given to understand that his future success in life depends upon his ability as a bookkeeper, it is irrational and inconsistent with common sense. Some of the business colleges try to convey that idea, and the circulars they send forth impressing this fact are certainly literary efforts that would

bring tears to glass eyes.

Two classes of business men predominate in the world to-day, and their methods of doing business are diametrically opposite. There is the old type and the new.

Two Types of
Business Men

The old type of business man is often
the kind that swells with pride and
tells you how he used to work on the
farm and live on about 40 cents a year,

&c. Don't take any stock in him, the chances are that he never saw a farm. To him you will have to say, salary is a secondary consideration (just as if you had plenty of money and only wanted to work to kill time), that opportunity is what you are after. He will like this, for he is getting your services for nothing, and the chances are that you will get the position. But you go to a hustling up to date, progressive business man, and about the first thing he will ask you after he has sized you up will be "What salary do you expect?" Place no value on your service with him and he thinks you are no good. If you don't value your own ability, rest assured no one else will. So a young man seeking employment to-day must use his own judgment in the matter, for circumstances often alter cases.

In speaking of the opportunities that a young man will have who accepts a position as a salesman with a reliable concern, I of course speak of this profession irrespective of the opportunities that

The Salesman's Opportunities

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spective of the opportunities that present themselves in other professions, such as the law, medicine, &c., and for which it requires years of

study. But a young man who starts as a salesman and who makes a success of it has much to look forward to. He will not be on the road many years before his services are found to be indispensable. Then there comes the time when a managing position looms up before him, and in many cases a partnership in the concern which he has faithfully served.

## GLEN MFG. COMPANY.

T a meeting of the stockholders of the Glen Mfg. Company, held at Ellwood City, Pa., on February 3, it voted unanimously to authorize an increase in the capital stock of the company from \$25,000 to \$50,000. This concern have been operating for a little over a year, and have built up a large and increasing business in the manufacture and sale of Cemetery and Lawn Fences, Ornamental Iron and Wire Work, Tree Guards, Folding Steel Door Mats. &c. 'The Board of Directors has been increased from five to nine, and comprises: H. S. Blatt, president of Ellwood City Trust Company; R. C. Stiefel of National Tube Company; Thomas W. McQuaide, Ellwood City, Pa.; Thomas Dugan, Ellwood City, Pa.; H. P. Richardson, Ellwood City, Pa.; George S. Seaman, New York City; F. H. Stedman, Rome, N. Y.; John C. Bole of Bole, Ross & Co., Pittsburgh; S. E. McDonald, Pittsburgh. H. P. Richardson, formerly president, has been made general manager, and H. S. Blatt has been made president. The other officials are: George S. Seaman, vice-president; A. M. Jones, secretary and treasurer, and F. H. Stedman, general sales agent. The products made by the company include Bank Fixtures, Ornamental Iron Work, Elevator Enclosures, Heavy Steel Fences, Light Lawn Fences, Cemetery Fences, Cemetery Entrance Gates, Vault Work in Steel and Bronze, Stable Fix-Cemetery tures, Jail Work, Glen Folding Steel Mats, Glen Steel Tree Guards, Glen Window Guards and Glen Steel Doll Go-Carts.

## THE MANN EDGE TOOL COMPANY.

THE MANN EDGE TOOL COMPANY, whose general offices are at Lewistown, Pa., with factories at both Millhall and Lewistown, Pa., announce that they have purchased the Robert Mann & Sons and Thomas R. Mann & Co. factories at Millhall, Pa., from the American Axe & Tool Company, who have operated them for some years, the latter interest having transferred to their Glassport, Pa., factory the future production of several of the Mann brands, which were not sold with the plants. A. C. Mann, and William H. Mann, who have continuously operated these factories for a quarter century, have become executive officers of the Mann Edge Tool Company, the former as vice-president and manager, and the latter as secretary, thereby concentrating all the surviving members of the firms named in the management of the business. This acquisition more than doubles the capacity of the Mann Edge Tool Company, besides greatly strengthening the management and efficiency. While they are unable to use several of the Mann brands which have been on the market during the past 75 years, the brands named below will be manufactured exclusively by the company and by the same experienced workmen and executives who formerly made the brands: Mann's X X (patent finish), Mann's Colonial, Mann's Old Glory, Mann's Old Honesty, Mann's Special, Mann's Diamond, Mann's Indian Chief, Mann's Buckeye, Mann's Forest King, True American, William H. Mann, Bald Eagle, Colonial Axe Company, Red Top, American Volunteer, Quick Cut, Lewis Axe Company, Jack Frost. The company have also just issued for free distribution a handsome pamphlet, showing single and double bitted Axes, together with views of the various Axe making plants they now operate.

## GRAEF & SCHMIDT.

R. GRAEF of Graef & Schmidt, 107 Chambers street, New York, has just returned from a European trip begun last fall. A number of changes have recently been made in the personelle of this house, which was established December 1, 1883. Ludwig Iwersen and Hermann Kind were admitted as partners at the beginning of the year. Mr. Iwersen, Mr. Graef's brotherin-law, who has been with the house since the business started, his duties being connected with the office and accounts, will continue to have charge of the books and financial matters. Mr. Kind, who has been with them for 15 years as a salesman on the road, will hereafter remain in this city and have charge of the New York store in matters of detail. J. A. Henckels, Solingen, Germany, for whom Graef & Schmidt are sole agents for the United States and Canada, are preparing the finest display of cutlery for the St. Louis Exposition they have ever made, not excepting Chicago, 1893; Paris, 1900, and Dusseldorf, last year. J. A. Henckel's architect and two assistants are now in this country installing the exhibit.

## TRADE ITEMS.

During the past year the Bank of North St. Joseph was established with a paid in capital stock of \$15,000, E. A. King of St. Joseph, Mo., being president. Mr. King is also president of the St. Joseph Pump & Mfg. Company, who are manufacturers of the Perfection Water Elevator and Purifying Pump, well known to the trade.

The William Schollhorn Company, New Haven, Conn., with New York offices at 155 Chambers street, in charge of Willis Simpson, have recently enlarged and rearranged the offices at their factory, separating the several departments and foundry. A commodious private office has been provided for F. T. Schollhorn, secretary and treasurer. Henry Staby has recently been appointed superintendent of the factory and assistant to Mr. Schollhorn in the management of the business, which occupies all of the five floors in the building, each 125 x 40 feet. A show room has also been provided for the display of samples, which include the numerous styles and kinds of the Bernard patent Pliers in the Paragon, Elm City, Vulcan and Lodi brands, Cutting Nippers, Belt and Ticket Punches, Excelsior Dividers and some Hardware specialties.

Marshall De Motte of St. Paul, Minn., whose name appears on some special articles on advertising that we have just started, is not a stranger to the Hardware trade of the Northwest, for he was a prominent figure in the Minnesota retail Hardware conventions for many years while treasurer of the St. Paul Hardware Company. He was markedly successful as a writer of small Hardware ads. for daily newspapers, and when he gave up the Hardware business stepped directly into the management of the advertising of one of the largest department stores in the Northwest. He has now withdrawn from that position to devote his time to the writing of advertising, giving particular attention to the preparation of matter for the Hardware, Tool and Machinery lines, for which he is specially fitted by practical experience.

The Tower & Lyon Company, 95 Chambers street, New York, manufacturers of Mechanics' Fine Tools and Hardware Specialties, have increased their capitalization from \$65,000 to \$100,000. T. D. Halliwell, who has succeeded Warren Tower as secretary, takes the entire increase of \$35,000 and also becomes a director of the company, the balance of the official force remaining as before, John J. Tower being president, as formerly. Mr. Halliwell will make his headquarters in the New York office. The company are preparing to get out many new goods in Hardware specialities at the factory, Bloomfield, N. J.

Lansing Wheelbarbow Company, Lansing, Mich., have increased their capital stock to \$665,000. The increase is for the purpose of extending their operations in Arkansas, where they have an extensive tract of timber.

## THE SHEFFIELD TRADES.

Sheffield, both in its heavy and light industries, experienced a bad year from beginning to end of 1903. The hopes of a booming time in South Africa have not been realized, and home buyers have preferred to maintain abnormally small stocks of Sheffield goods, particularly Cutlery. The year closed in Sheffield with all orders practically completed, and in most cases workmen making for stock.

CUTLERY.—Several branches of the Cutlery trade were quiet throughout the past year, and at the close complaints of depression were general. The sluggishness that characterized the home market in 1902 continued; and difficult as it was to secure orders it was more difficult to collect accounts. There was an improvement in the South African, Canadian and one or two other distant markets. Trade with Australia was stagnant, and comparatively few goods were sent out. About the end of the half year there was an improved demand in several directions, and a considerable amount of business was done up to November, when orders again fell off to disconcerting extent. The Table Knife branch has been depressed, and at the close of the year a number of cutlers were seeking employment. For several years there was an excellent inquiry for spring Knives, but about April and May orders fell off to a remarkable extent, and things have been getting worse since. A year ago manufacturers had much difficulty in getting such Knives made, and could not produce them in sufficient quantities to meet the demand. Now there are spring Knive cutlers seeking work. The Pocket Knife branch has kept up remarkably well, and some firms had difficulty in filling all the orders they received for Christmas. The case Carver trade-a season trade for Christmas presents-has been a good deal below the average of recent years. In Razors and Scissors the last was an unusually poor year.

Pearl, Ivory, Stag and Celluloid Scales.—The demand for Ivory throughout the year was steady, but there was not the business doing for the Christmas trade that, judging by former years, was expected. The Handle most in demand was of a medium quality, and for the commonest sorts there was a very slow sale. The

complaint is that Ivory does not run as good now as it did years ago, and there is no prospect of the quality improving. As a result there is a scarcity of the best class of Handles, and if any great demand for them should spring up difficulty would be experienced in meet-Notwithstanding the quietness of the trade, prices ing it. at the Ivory sales went up in the aggregate to the extent of about 12 per cent. on the year. Cutlers, however, have not advanced their list prices. The American demand kept up, most of the Ivory bought being for Piano Keys and Billiard Balls. The imports of Ivory from January 1 to November 30 into the public warehouses were 238 tons, and the deliveries from them were 252 tons. Orders for Celluloid for Table Cutlery came in fairly well. It has proved to be a good, cheap Handle, suitable to all climates, and it has largely superseded some natural materials. Stag Horns are still scarce on account of the free buying for America, and they are constantly getting dearer. Buffalo, pressed to imitate Stag, to which reference was made last year, has had a capital run, there having been a demand for all placed on the market. Pearl has become more scarce and dear. Cutlery exports were £685,492 for the calendar year of 1903, and £659,613 for the corresponding period in 1902.

WILLIAM H. COLE, treasurer of the Tower & Lyon Company, returned last week from a business trip to the Pacific Coast, began December 29, the first stop from the East being Los Angeles, thence up the Coast to Seattle and Spokane and then to Denver. Mr. Cole was greatly impressed with the confidence and optimistic feeling of the trade everywhere he went, not only among Hardwaremen but in many other fields, there being a sanguine feeling that there will be a larger business than ever the coming year. Money is plentiful on the Coast, and the demand for goods seemed, to Mr. Cole, unprecedented, all merchants carrying large stocks.

J. J. Keon, St. Louis, Mich., requests manufacturers of Plumbers' and Steam Fitters' Tools and Supplies to send him catalogues, &c., pertaining to these lines.

## The Iowa Retail Hardware Dealers' Association.

THE sixth annual convention of the Iowa Retail Hardware Dealers' Association, at Des Moines, was inaugurated this (Wednesday) morning with a meeting of the Executive Committee at the Kirkwood Hotel, the headquarters of the association. Subsequently a meeting of the Board of Directors of the Insurance Association was held.

The formal opening of the convention did not, however, take place until the afternoon, when the first general session was called to order. After the enrollment of members and collection of dues, S. R. Miles, Mason City, president of the association, presented his annual address, which is given in another column. The secretary-treasurer's report followed the appointment of the convention committees by the president. The contents of the Question Box were then taken up for discussion, after which the convention adjourned until Thursday morning.

A number of very interesting papers on practical trade topics are down for presentation before the association, many of which, through the courtesy of the authors, we are enabled to publish in the following pages.

## PRESIDENT'S ANNUAL ADDRESS.

BY S. R. MILES, MASON CITY, IOWA.

I will not attempt a discussion of the events of the year that has passed since our last convention. Neither will I undertake to discuss trade conditions for the coming year, but will leave that in the more competent hands of our friends, the trade journals. I will confine myself briefly to a résumé of association work of the past year, and, with your kind indulgence, will make a few suggestions along the line of future work.

THE NATIONAL ASSOCIATION AND ITS WORK.

As a delegate, together with Secretary Vincent, I attended the meeting of the national convention at Chicago, in March. There were in attendance at this meeting representatives of 17 State Hardware associations, and a more earnest and progressive delegation of Hardwaremen would be hard to find—men that were willing to give of their valuable time in an effort to improve not only their own business condition, but that of the thousands of their fellow dealers doing business in their several home States, whether members of their State associations or not. If every Hardware dealer in Iowa could have attended that meeting, instead of there being less than 300 members of the Iowa association, there would be 1500 at least. It would not be policy for me to give

you at this time more than a brief outline of the work of this national gathering. National Secretary M. L. Corey of Argos, Ind., and A. T. Stebbins of Rochester, Minn., national treasurer, and L. Lindenberg of Dubuque, member of the National Executive Committee, will be with us at this meeting and, in Executive Session, will tell us of the work of the National Association.

After listening to these gentlemen you will understand as never before the good work the association is doing, and why it is being recognized as an important factor in trade circles. It is one of the duties of the State associations composing the national to make it possible to increase this power and influence. I regret to say that Iowa, with her magnificent possibilities along association lines, does not occupy the place in this work to make us proud of her position.

#### POWER OF ORGANIZATION.

We have, in round numbers, 1700 Hardware dealers in Iowa. Think for a moment, gentlemen, of the unde-



S. R. MILES.

veloped power within our ranks that only awaits the magic touch that will bring us to a full realization of our strength. We are sometimes asked what is the association doing? I confess that to give a satisfactory answer to a dealer that has never attended an association meeting is sometimes a puzzle, but given anywhere near the membership to which our work entitles us and this question would never be asked. If any dealer present is not satisfied with existing business conditions let me tell him there is a remedy, and that remedy's name is "Organization."

This is an age of organization, the jobbers, the manufacturers, the catalogue houses and, in many localities, even our customers are organized. Can we successfully combat single handed this array of organization? A great deal has been accomplished along association lines, and yet, I am sure, it is only in its earliest infancy, and that the next two or three years will witness a great increase in membership and general interest in association work.

## ONE OF THE GREATEST HINDRANCES TO OUR WORK

during the past years has been the fact that business conditions have been too good. We have been too busy to give heed to any affairs outside our own immediate business. We cannot go on forever increasing our trade; there will sooner or later come a halt if not a decline. Are you prepared for this? How are you going to meet it? Reduce your expense account, did you say? You cannot confer a greater favor on your fellow Hardwaremen than to share with them the secret of reducing an expense account. Why not try this remedy? Meet your brother Hardware dealer in a friendly spirit and agree

with him to maintain what you must have, that is, a reasonable margin of profit on your goods. Do not attempt more than a fair profit or you will turn success into failure. Be willing that he as well as yourself shall get reasonable returns on his labor and capital invested. You will never have cause to regret the trial.

#### CO-OPERATIVE BUYING.

One of the best things resulting from a friendly relationship between dealers, particularly in the same town, is co-operative buying. Much complaint against catalogue house competition could be eliminated by better buying methods. It is worth a trial. I do not believe manufacturers as a whole are considering either jobbers' or retailers' interests to the extent they are entitled. Surely not when they place a catalogue house on an equal price basis with the jobber. Happily there are few manufacturers doing this, the great majority being alive to their own interests. With every dealer in Iowa a member of our association we could, to say the least, command the wholesome respect of every manufacturer in the country.

#### SHOW YOUR COLORS.

I would suggest that each member of this association show his colors by having printed on his letter heads an announcement of the fact that he is a member of the Iowa Retail Hardware Dealers' Association, and don't be afraid to use these same letter heads in writing your customers. In these days of trades unions, farmers' cooperative societies, &c., a man who does not belong to some kind of an association is looked on as a back number.

#### PARCELS POST.

One of the greatest dangers threatening the retail interests of the country to-day is the parcels post movement, fathered by the catalogue and mail order houses. This subject, so ably presented by National President Bogardus and Secretary Corey before the National Hardware Jobbers' and Manufacturers' Associations at Atlantic City in November, and attended with such good results, will be handled without gloves by Secretary Corey during this meeting. I trust that some action may be taken that will result in placing the Iowa association in the forefront of this movement. Resolutions and petitions to your Congressman are not necessarily wasted efforts, but I believe a letter from you, whether you have ever met the gentleman or not, will be much more effective. It will impress on his mind the fact that you are honest and sincere, and an honest effort on any subject is sure to get results.

## EXEMPTION AND PEDDLERS' LICENSE BILLS.

I was authorized about October 1 by the Executive Committee to make a contract with the Iowa Retail Grocers' Association whereby their State organizer and solicitor, W. H. Levy, began soliciting members for our association. Mr. Levy's work resulted in quite an increase in membership for us, and it is to be regretted we did not avail ourselves of his services at an earlier date. Mr. Levy's work, while primarily soliciting association membership, has been largely one of education along legislative lines. As a result of his labors there have been or will be, presented at this session of the Legislature two bills of great importance to every retail dealer in They are an Exemption bill and a Peddlers' Iowa. License bill, and I earnestly request that every dealer in attendance at this convention will make it a part of his business here to meet his Senator and Representative, and impress upon them the importance of these bills becoming laws at this session of the Legislature. If you do this, gentlemen, the dealers outside our association can no longer ask what good is the association doing and why should I belong? "By their fruits ye shall know them."

Last, but not the least, of the work done by the association during the past year has been the successful launching of the

IOWA HARDWARE DEALERS' MUTUAL INSURANCE ASSOCIATION.

An explanation is due you as to why this company, authorized by the association in February, did not re-

ceive their certificate of authority from the Auditor of the State to commence business until August 20. Our first work was to secure the services of a competent man for secretary. We had a number of applications, and finally secured the services of A. R. Sale of Mason City, who has proven the right man for the place. Our next work was to prepare articles of incorporation and bylaws. While there are a number of State mutuals organized under the same chapter of the insurance laws as our own, yet on attempting to use their articles of incorporation and by-laws as a guide we found very little in them just suited to our needs, for the reason that with one exception all of the State mutuals are accepting all classes of mercantile risks, while we confine ourselves to the risks of members of Hardware associations. About the time we were ready to submit our articles and by-laws to the State authorities we learned that the State mutuals had up at that time with the State Auditor and Attorney-General a very important question relative to the collection of assessments.

The outcome, after a two months' discussion of this question, was the granting to State mutual companies authority to collect one full advance assessment covering a period of not more than one year, and the Iowa Hardware Dealers' Mutual Insurance Association were the first company to take advantage of this decision. In fact they are the only assessment mutual company who have so far adopted it; but I can assure you that the success or failure of this plan is being watched with a great deal of interest by the other mutual companies of the State. I predict the plan will prove so successful that it must be finally adopted by all successful mutual companies. It is so manifestly a business proposition that it cannot help, when fully understood, to commend itself to every business man, and to a company just commencing business it means even more than it will after the child has grown stronger. It means the cost of collecting one assessment instead of three or four. It means the saving of losses that occur at every assessment. It means that each policy holder pays for his insurance on the same basis, and that those who pay promptly are not carrying insurance for members that may see fit to drop out when an assessment is made, having had their insurance carried from three to six months without cost. It means, what will appeal to every business man, cash on hand with which to pay all losses and expenses promptly.

## IT REQUIRED HARD, PERSISTENT EFFORT

to secure applications for the necessary \$100,000 to enable us to commence business. This was finally secured and the company started on their way. As you will learn from later reports, we have insurance in force and applications for nearly, if not quite, at this time \$200,000, and we ought to double that amount at this meeting, with your help. One thing in connection with this insurance work your officers have found very hard to overcome is the evident feeling on the part of some dealers that this company have been organized for the benefit of a few at their expense. That some one is going to receive a benefit from this association cannot be denied, but that some one is every man holding a policy in the association. The only salaried officer is the secretary. An inspection of the books of the company, which are always open to members of the association, will show the company to be managed on the most economical lines possible, consistent with good business methods. There are only two items that enter into the cost of your insurance in this association, the losses paid and the expense account. With your hearty support this company can be made one of which every Hardware dealer in Iowa will be glad to become a member.

## ASSOCIATION SECRETARY.

I have repeatedly stated at our annual meetings that I did not believe the Iowa Retail Hardware Dealers' Association would attain its highest degree of efficiency until we were able to employ a secretary whose time will belong to the association and who can devote his entire energies to the work of building up the association, and on this subject I have not changed my mind. We

have had ever since our organization secretaries who have been competent, willing and anxious to in every way serve and promote the best interests of the association, but they have all had business of their own and could not reasonably be expected to give all their time to association work. I am sure their own business has been neglected many times in giving this work their attention. Gentlemen, is it right? Is it justice? Is it necessary to continue our work on this plan? I think not, and believe some action should be taken before the adjournment of this convention that will provide for the employment of a secretary.

And now, gentlemen, let me in closing appeal to you to be loyal to the association, and never permit yourselves to ask, "What is the association doing?" but be able to tell your brother Hardware dealer who may not be a member what our association is doing. Your business is assailed from every side. You cannot combat alone and single handed thoroughly organized effort, backed up by brains and unlimited capital, to capture the business that belongs to you; and the sooner you recognize this fact and give some of your time and energies to the upbuilding of an association that can and will help



J. F. DOTY.

you, just that much sooner will you get your business in a more satisfactory and profitable condition.

## CAN FURNACES BE SUCCESSFULLY HANDLED IN A HARDWARE STORE?

BY J. F. DOTY, WEST LIBERTY, IOWA.

It is my intention to discuss this question from a business, and not a scientific, standpoint.

First.—Buy a good Furance from a responsible manufacturer.

Second.—When you sell a Furnace, sell it with a guarantee to heat the building to a certain temperature when the thermometer is a certain hight.

If necessary, give a bond to qualify the contract, and collect the bill. This will make the Furnace heat better and give you a better appetite, and you will sleep better, and it will enable you to use the money and pay cash for your Furnaces, thereby getting the benefit of cash buying.

You may think this theoretical and almost impossible, but this has been my policy during six years of experience of selling an average of 50 Furnaces annually, and I have carried it out to the letter and find it the most satisfactory to all parties concerned. It has been my policy to

## SELL A FURNACE ON A FAIR MARGIN

and at a price that will warrant the employment of skilled labor, the using of good material and the doing

of a first-class job. I believe this to be fair between man and man, and I do not deviate from this practice. My observation has been that many dealers take a Furnace job so cheap that they cannot put in a large enough Furnace, employ experienced workmen, use good material, proper sized registers and pipes, set Furnace right or collect their bills.

Success or failure depends entirely upon size, location and setting of Furnace, size of registers and pipes used and their location, and cold air ducts to the Furnace, also mechanical ability and material used, as upon these elements circulation wholly depends. Without perfect circulation the natural and unfortunate result must be failure.

THE PRIME FACTOR IN SUCCESSFUL HOT AIR HEATING IS CIRCULATION.

Better results can be obtained from the use of 1 ton of coal with Furnace set right and with good circulation than with 2 tons and Furnace poorly set and poor circulation, and this item is all important with seller and user, and it has been an experience of gratification to the writer to learn that a fair minded man can be made to see that it is money saved in the long run to pay an experienced Furnaceman his price and have his house well heated and ventilated rather than take a chance with a cheap man, who has but one aim, and that—to get the job.

#### DETAIL WORK.

To conduct a successful Furnace business requires experience, study and close attention to detail work. Detail work is very important, and many dealers give no thought to this phase of the business. There should be a good reason for locating a register here or there and for using a smaller pipe in one place and a larger one somewhere else. It is important that no changes be made, as this is annoying, and often expensive to your customer as well as yourself, and invariably results in a botched job.

I have known dealers who never estimated the time of their men in setting a Furnace, making pipe, time consumed in travel, waste of material, &c. They figure, if they figure at all, that they have to keep the men anyway, and while they were traveling they were resting, so that they would work harder when they got to their destination, and the waste material they could use to tack over rat holes in the store, and, best of all, they got the job away from the other fellow, this being their sole ambition.

## FURNACES CAN BE SOLD THE YEAR BOUND.

Furnaces can and should be sold the year round, and I believe a dealer should bring this forcibly before his prospective customers and try to close as many contracts as possible early in the season. This, too, may seem theoretical, but the writer finds it quite practical and profitable. By so doing you are enabled to give steady employment to your men, and they become interested, accurate and speedy in this special work, and turn off good work to good advantage, and you are in position to push your work instead of your work pushing you. When the Furnace work is all crowded into the latter months of the year it works a hardship upon those whom you are doing work for as well as yourself.

## PRACTICAL INSTRUCTION

should be given to each Furnace user for operating, cleaning and firing the Furnace. If he is from Missouri, "show him." For upon this depends the life of Furnace, consumption of fuel and temperature of rooms. The writer tries to impress earnestly upon the Furnace user the importance of caring for the Furnace when it becomes his property.

Progress leads the future by the hand. The Furnace is yet in its infancy, and if the rapid strides of progress in hot air heating continue in the future as in the past circulation will be acknowledged by scholars of science to be the true method of heating. To prove my position to be correctly taken relative to circulation being a great and natural method, circulation was first employed in the creation of man and he has been circulating ever since.

#### HAY TOOLS IN A HARDWARE STORE.

BY F. W. WOODRUFF, CORRECTIONVILLE, IOWA.

I can see no reason why every Hardwareman in Iowa who caters to the farmer should not sell more or less Hay Tools and make them an important and profitable part of his stock in trade. There are few communities in Iowa where the hay land does not produce a better net profit than wheat, oats or corn. In my territory, and the country is comparatively new, two tons of tame hav can be grown on an acre of ground in any ordinary season, and this quantity of hav will sell at an average price of \$7.50 per ton, making \$15 per acre, which, you must admit, makes good returns for the land. The expense of growing being much less than for any other crop, the net profit is apparent. When we recognize this fact the importance of caring for such a crop is truly evident and should be impressed upon the farmer, who may be induced to buy such tools as will materially help him in his efforts to save his hay.

#### IN THE SALE OF HAY TOOLS,

like every other line that is auxiliary to the Hardware trade, the dealer himself plays an important part in educating his customers. He should, by all means, make



H. S. VINCENT, Secretary.

himself familiar with his goods, if he is to inspire any great degree of confidence and avoid to the utmost the exposure of his own ignorance.

I remember quite well when the farmers in my territory began to use the hay carrier in their barns. The track was a crude affair, and, although clumsy, it answered the purpose and greatly facilitated the handling of a large hay crop. My faith at that time was just as strong as it is now, but the large barns were not there, hay was worth only \$3 per ton and customers were scarce. I have on hand now a few old style Porter carriers for wood track, which I am likely to keep until I sell out or quit the business. I continued to buy improved goods as the trade demanded, until the purchase of a stock of Hay Tools became as important as that of any other line. For a number of years

### MY SCHEME FOR MAKING SALES

has been to suspend 20 feet of track from the ceiling of my wareroom adjoining my store, and near the front door where it can be seen. There are many farmers yet who are not familiar with the hay carrier, and they have to be shown, so I put a hay car on one end and a sling car on the other, both well oiled and with enough Manila rope to show the prospective customer just how they would look and work in his barn. The exhibition seldom fails to make a sale.

Experience teaches me that it is not only good policy but profitable to carry a first-class article. A poor one is not only dangerous to those using them, but the expense of breakage and time wasted in repairing soon destroy a legitimate profit. Buy the best, for it costs but a little more. See that you get a carrier made of malleable iron that is not liable to break. Get one that has a first-class track, one that will carry either a fork or a sling without springing.

#### WEAK POINTS.

If we know the weak points in this line we can avoid them, and I believe I am safe in saying that a great many makes are possessed of some of the following imperfections:

- 1. They are made of common gray castings and break easily.
- 2. The wheels or rollers are not properly adjusted, allowing the car to spread and come off the track.
- 3. Too many dogs and springs that wear and become weak.
- 4. A track that is inconvenient to hang and often uneven.

First-class track may be had that is convenient to put up, and this is important, for the carpenter who builds the barn is often to be reckoned with. About one-half of my sales are made to contractors who build the barn complete with hay track and carrier.

#### BUY ONE LINE.

I mention these defects, for I believe that any dealer who cares to do so can avoid much grief by keeping only first-class goods. I am not here to advertise any particular line, but to emphasize that it be a good one. I feel safe in especially recommending the average dealer to convince himself that he is right, and then buy one line only.

The main reason for this is that he shows his own confidence in the goods and also that he can carry a larger salable stock with the same capital. He does not find himself with one style of carrier and another style of track.

Another very important reason for selling one line is that you get the benefit of being advertised for another sale of the same goods. It takes time to build up a trade on one line, but when once established it is much easier to make sales.

## ADVERTISING HAY TOOLS.

I am a firm believer in advertising a good thing and staying by it. I have issued a little book, which may be seen at the secretary's desk, setting forth the advantages of the different lines I sell. In that book I devoted two pages to Hay Tools, and it has returned me business and created a demand for almost everything it advertised.

If you do not care to get up a book you can get illustrated advertising matter from any manufacturer whose goods you sell, and if mailed direct to your customer, showing that it came from you, it will produce good results.

I am opposed to the practice of sending long lists of names to the manufacturer, for the reason that many things are advertised not in your line, and when you send out the printed matter yourself your customer feels that you are showing a personal interest in him and he is more likely to respond.

I make use of the local paper and advertise the Hay Carrier alone, commenting on its usefulness and telling why the one I sell is superior to all others. This shows my own confidence in the goods and creates a demand for them. The picture of a good Washing Machine will help materially to sell it. If you will open a copy of Sears & Roebuck's catalogue you will find the most unimportant article illustrated, and a little reading matter just below it that will convince you immediately that there is nothing too good for the patron of a catalogue house.

## SPEAK OUT FOR GOODS.

Now, I do not advocate reckless advertising. I try to do a conservative business and let the merits of the goods increase my trade, but I believe that we should not hesitate to speak out and show the people that we have unlimited confidence in the goods we offer for sale.

The most important feature of the Hay Tool trade

is a good stock of Hay and Sling Cars, Track and Hangers and plenty of Rope. Be ready for your customer when he comes, and you can hold a whip row over the dealer who is always just out but expecting some in a few days.

## HOW TO MAKE THE FIELD AND GARDEN SEED DEPARTMENT OF YOUR BUSINESS PROFITABLE.

BY C. E. HAAS, LE MARS, IOWA.

There are no doubt many Hardware dealers here, like myself, who in connection with Hardware handle Seeds, and have found this branch of the business profitable. In handling this subject of Seeds, I can only speak to you from my own experience, covering a period of over 20 years. With us in our city the handling of Seeds has become a very important factor; it is one of the greatest specialties in connection with our business, and the Seed business, as a whole, in our city is controlled almost entirely by the Hardware trade.

#### THE HANDLING OF SEEDS IS NOT AN EASY PROPOSITION.

It is a business that calls for the closest attention, and must be understood and closely watched to make a success of it. The merchant who starts out to lay the foundation for a successful Seed business must keep constantly in mind the all important fact—namely, the handling of only



C. E. HAAS.

good and reliable Seeds. His motto must ever be: "Not quantity, but quality."

### QUALITY COUNTS

for more in the purchase of Seeds than in almost any line of merchandise. Too much care cannot be given in the purchase of Seeds. The question of how cheap can I buy Seed ought never to be considered, if the question of quality is left out. Poor Seed will only bring disappointment to the customer, and work harm to the dealer from whom purchased. There is no line of goods where quality is of so much importance as in Seeds. When a person starts out to invest in an article of any kind he has an opportunity of exercising his own judgment, but in the matter of Seeds he has to depend largely on the confidence which he reposes in the dealer. The merchant who is unfortunate enough to sell a man or woman a bill of poor Seeds is surely sowing trouble for himself. The result of poor Seeds means to the innocent purchaser hard labor without recompense, loss of a season's harvest and disappointment.

## DOES IT PAY TO HANDLE SEEDS?

In my opinion, it does pay to handle Seeds. To our firm it represents a nice sum added to our annual sales, and this is not all—it brings a very desirable class of people to your place of business. The sale of almost any other article of merchandise is confined to a certain few in every community. You sell a Stove, or a Furnace, or a piece of farm machinery, and sales of this nature reach

only a very few or small proportion of the families living in your midst, but not so with Seeds. When Seed time comes you have an article that is wanted, and called for by every family within reach of your place of business. This brings people to your store, not alone to buy Seed, but very often leads to other sales, especially seasonable goods, such as Hoes, Rakes, Spades and other Garden necessities.

#### CATALOGUE HOUSES DO NOT HANDLE SEEDS.

Another very good reason why it pays to handle Seeds is this: Has it ever occurred to you that here is an article of merchandise that is not handled by catalogue houses? To my knowledge there is not a catalogue house in the country that sells Seed—and, in my judgment, never will be. The merchant need never fear competition from this source. You would find very few people (if they had the opportunty) send their good money in advance to a catalogue house for a bill of Seeds, and wait from seed time until harvest to find only that their crop was a failure. When it comes to taking desperate chances, they will always prefer taking them with the home merchant. The catalogue house fellows evidently know this and will never go into the Seed business.

#### KIND OF SEED TO HANDLE.

This depends largely on location. Each man in the Seed business ought to study local conditions and become familiar with the needs of the people, and govern himself accordingly. I have found from experience that it does not pay to experiment too much with new varieties of Seeds, as they oftentimes prove a failure. I have found that in the long run it pays best to stick to well-known and time tried varieties.

#### METHODS EMPLOYED.

Perhaps there are some here who are interested enough and would be glad to hear how our firm have made a success of the Seed business and some of the methods employed. I shall try to give you what information I can along this line in as brief a time as possible. I have already touched on the matter of quality. Well, quality was the stepping stone to our success as Seed merchants. After this important step was taken we turned our attention to minor details, and these also received careful attention.

We handle all the common varieties of Vegetable and Flower Seeds in bulk and package-also Grass and Field Seeds, and in season plants, such as tomatoes, cabbage, We attribute our success to a great extent to the fact of handling Seeds in bulk. A majority of our trade prefer buying Seed in this manner. Some people want to see the Seed itself and the quantity that is being weighed out to them. These people are, as a general thing, good gardeners and understand their business. There is another class who are only looking for labels or a package of Seed with the nicest picture on the outsidea fatal mistake. In selling our bulk Garden Seed (that is, all the small varieties) we use gummed envelopes. We have found these most convenient, as it saves much valuable time on a busy day. On these envelopes we have printed as follows: "Reliable Seeds," and our firm name. It is no unusual thing to put up for one customer from 10 to 20 packages of Seed, ranging in price from 5 cents to 10 cents each. The variety of Seed and price is written on each package.

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## PACKAGE SEEDS,

as you are all aware, are sent broadcast all over this land and are handled by racket and department stores. In order to check this competition we, years ago, adopted a system of having put up for us our own package Seeds. We make our own selection of varieties of Seeds wanted and have them put up in extra large papers, containing about double the quantity of Seed as compared with the ordinary papers. We have found this plan very satisfactor, and our package Seed trade is growing from year to year.

## DISPLAYING SEEDS TO BEST ADVANTAGE.

When the season opens up we bring our stock of Seeds to the front—we give them the most prominent location in the store. The display jars and Seed cabinet are thoroughly cleaned and relabeled. The more bulky Seeds,

such as beans, peas, sweet corn, beets, along with Grass and Field Seeds, are displayed in bright new pails and everything made to look fresh and clean and attractive. We make our Seed department look tempting, and many a person is led to buy Seed who would otherwise (if stock looked old and neglected) never give the purchase of Seeds a thought.

#### A WINDOW GARDEN.

If your store fronts to the east or south or is located so that you can obtain sufficient sunlight, one of the most unique ways that I know of to advertise your Seed business is to have a window garden. This can easily be arranged if you have the proper show window, by taking and filling the entire space in window with shallow boxes of uniform size and depth. Fill them with common garden soil, and sow in these boxes a variety of the common Vegetable, Flower and Grass Seed. Sprinkle daily. If the Seed it good it will seen germinate, and as the plants and grass begin to grow and develop you will have a combination and harmony of colors that only nature can produce, and the best artist cannot equal. A window of this kind will attract old and young. The school children going back and forth from school will stop daily and admire your window, and talk about it to their parents, and your Seed department will be advertised in every home in your city, and in this little garden you can erect a sign, not reading: "Keep off the grass," but one that reads, We sell Seeds that grow.'

#### OLD SEED CARRIED OVER.

When we take our annual inventory we go over our Seed stock carefully, and any Seed that has lost its germinating power or vitality is thrown to one side—and destroyed by burning it up. We have never yet made the fatal mistake of selling old Seed cheap, or giving it away to get rid of it. No matter if one gave it away, it would fall into the hands of a dissatisfied customer, and the merchant would get the blame for the man's troubles.

I have it from good authority what disposition one large Seed firm made of their accumulation of old Seed. This happened a number of years ago. The firm are now out of business, so I am casting no reflections on any Seed firm of the present day. This firm sold under contract their entire stock of Vegetable Seeds to the Government, and Uncle Sam in his greatness of heart scattered it broadcast over this land of ours, and the gentlemen who are largely instrumental, and whose duty it appears to be to carry on this great work of benevolence in distributing this Government Seed, are members of Congress. Some men are mean enough to remark that the only time that some Congressmen are heard from is about Seed time and voting time; of course, this does not apply to the delegation in Congress from our own State.

## GOVERNMENT DISTRIBUTION OF SEED.

Now, this leads me to a thought that, perhaps, is somewhat out of place at this time and upon this occasion. But the subject before us is Seed, and how can we make that branch of our business more profitable? So I am going to touch briefly on the free distribution of Seed by the Government. There may be many of my hearers in the Seed business like myself, who feel as though an injustice was being done to many engaged in the Seed business. In my opinion this free distribution of Seed by the Government, to a great extent at least, is all wrong, and steps ought to be taken to have this custom, as far as it relates to all the common varieties of garden and field seeds, abolished. There are many receiving their entire stock of garden and vegetable Seeds every spring from the Government-people who are well off, many of them, who ought and would buy their Seeds from the home merchant if it were not for this free Government Seed.

There is no good reason why in this day of agricultural development, when our country is so prosperous and good Seed firms have been established in almost every State in the Union, that this practice should be continued; and we know that the bulk of such Seeds are only the common, every day varieties under an assumed name, and can be bought in any city or town in the United States.

Take our own State of Iowa as an illustration. There

are a number of good, reliable Seed firms doing business in this State. Some of the people connected with these institutions are expert Seed men. They have for years carried on experiments, have studied local conditions, are well acquainted with the nature of the soil and what it will best produce; they have much capital invested, and have been in many ways instrumental in the upbuilding of the vast agricultural interests of the country, and in all justice it is due to the great Seed interests that they receive at the hands of the Government the same consideration and protection that other large business interests do.

## KNOWLEDGE, ENTHUSIASM, PERSEVERANCE.

The Seed business, to be successful, requires knowledge, enthusiasm and perserverance. The man who makes a study of Seeds, carries on experiments at his own home—and in his own garden—makes of himself a general storehouse of information on the subject, and when he talks Seed to his trade he does so intelligently. He grows enthusiastic and people soon look up to him as an authority in regard to such matters, and by perseverance his success is assured.

#### THE QUESTION OF AGRICULTURE IN OUR PUBLIC SCHOOLS.

One of the leading questions, and a very important subject, that is being considered and discussed by educators of this country at the present time is the study of agriculture in our public schools. Iowa is almost purely an agricultural State. The question is whether pupils shall give all their time to the study of books and become all bookish, or if some attention should be given to the cultivation of the soil, from which so many of the boys and girls of this country must earn their bread and butter. Personally, I am pleased to see this question receiving some attention. If I had my way in the matter, agriculture would not alone be taught in our public schools, but every school building would have its school garden. I would make it an outdoor laboratory, or a part of the school equipment for the purpose of direct instruction. I believe many pupils, if given the opportunity, would become interested. It would take the pupil out of doors and to nature, and would give him a taste of the practical side of life, and would make better men and women of them.

My reason for touching upon this subject upon this occasion is that I believe matters of this nature are closely related to the Seed business. Let a man who is interested in handling Seeds, if he has a garden of his own, if he spades, rakes, plants, hoes and harvests with his own hands; if he believes in beautifying, not alone his own home, but taking an interest in beautifying the streets of his city—if a dealer in Seeds shows tendencies in this direction, then I contend that such a man is well equipped to carry on a successful and profitable Seed business. He certainly has a great advantage over a competitor who pays no attention to these things.

## CONVENTION SEED.

We have left our homes and places of business to join hands here for the purpose of mutual protection. We are here to aid one another; to-day our interests are one. We are assembled as business men to devise ways and means for the advancement of all our interests. We can learn much from one another. I trust that some good seed may fall here, that we can take home with us and sow into our business, which will grow into new life and energy, so that we may be better prepared to meet the demands made upon us in the year 1904, and that our efforts will be crowned with success is my earnest wish.

## AN ARGUMENT FOR MUTUAL FIRE INSURANCE.

## BY L. LINDENBERG, DUBUQUE, IOWA.

As we all realize, we live, at present, in an age of consolidation. Capital is consolidated in the shape of gl-gantic trusts and monopolies. Labor, to protect itself and maintain its rights, is also getting together in the shape of unions. The merger microbe seems to be in the air, and permeates all phases of our social and business life.

The retailer, thus far, has not done much to secure to himself the benefits accruing from concerted action with his fellow merchants. More recently, progressive dealers

in nearly all the States of our Union have been meeting in annual conventions, to talk over their troubles, and by putting their heads together devise ways and means for bettering their condition. Of all the schemes proposed, I don't know of anything that

#### PROMISES MORE DIRECT RESULTS

than the establishing of co-operative fire insurance companies. These companies are organized and maintained by Hardwaremen only, writing only Hardware risks, which by insurance men generally are considered the safest of all, as the goods we carry are not at all hazardous, and even in case of fire the salvage is generally a considerable item.

The old line companies pay agents large commissions to secure business for them, and have high priced presidents and other officers drawing large salaries. They do business in gorgeously furnished offices. By cutting out all these useless expenditures, the co-operative companies are placed in a position to save their policy holders all the way from 25 to 40 per cent. of their premiums.

In fact, some mutual companies, in certain years, have



L. LINDENBERG.

effected a saving of as high as 60 per cent. on regular rates. The plan of action heretofore adopted by the mutual companies doing business in Iowa was to assess a certain amount of the premium when the policy was written, and then call in another assessment if this was necessary. This proved a bunglesome and tedious way, leading to lots of misunderstanding and consequent correspondence.

## THE IDEAL PLAN OF MUTUAL INSURANCE.

After working hard with our State officers, we have succeeded in having them sanction the following plan in organizing our company. We write the policy holders at the regular rates which they are paying. This sum is credited to the account of the policy holder. At the end of the year the losses and expenses of doing business, that have occurred, are charged up, pro rata, to each policy, and the balance is returned to the policy holder in cash, or is applied on their next year's premium.

We offer safe insurance at the lowest possible figure—namely, at cost. The only officer drawing a salary is the secretary, the other expenses being only those incurred in maintaining the office and for directors' meetings.

There is no argument which can be advanced against mutual companies. The rapid manner in which they are multiplying speaks for itself.

In conclusion, I would like to extend to very one of you a cordial invitation to Join us, giving us at least a part of your business. Remember, "In union there is strength," The larger our membership the greater the saving for the policy holders will be, and consequently the cheaper your insurance.

## PAINTS—WHY THIS BUSINESS BELONGS TO THE HARDWARE DEALER.

BY G. L. MILES, GRINNELL, IOWA.

The Paint, Oil and Glass business rightly belongs to the Hardware dealer, and he is a wise man who insists on having his share of it, in spite of all comers. It belongs to him because he needs it; it naturally fits into his stock of builders' goods, and he can handle it to better advantage and more economically than any other retailer.

A COMBINED HARDWARE, PAINT AND GLASS STOCK

is popular with the contractor and builder, as it enables him to largely concentrate his purchases, and makes it more convenient for him to order his supplies. He will, all other things being equal, prefer to buy his Paints. &c., with his other builders' material. The Hardware dealer is in the best position to get the Paint business, especially on new work, and he can talk Paint while looking after his other lines, without in any way interfering with his regular business.

The exclusive Paint store is becoming a thing of the past, and the trade is rapidly drifting into other channels. The Hardware dealer is neglecting a fairly profitable proposition if he does not add this side line, which can be handled without a dollar of added expense for help and rent.

#### THE PAINT BUSINESS WILL HELP

the dealer's other business. Paint manufacturers are good advertisers, and are hard hustlers for business. They help the dealer sell the goods by a direct modern system of advertising that is effective. The prospective Paint consumer is bombarded with good, strong Paint arguments, which help to overcome the prejudice many people have against prepared Paints, and explains why a good, honest Paint, composed of pure Lead, Zinc and Oil, scientifically proportioned and thoroughly ground and mixed by machinery, is better, cheaper and more satisfactory than the old time product, mixed with a wooden paddle and proportioned by guesswork.

This advertising educates the consumer, creates a demand, sells Paint and keeps the dealer's name and business before his customers.

## THE PAINT BUSINESS HAS ITS UNPLEASANT FEATURES.

There seems to be something wonderfully demoralizing about it. There is no class of mechanics so thoroughly averse to paying their bills as some who buy and use Paint. There is no class of retailers who are, as a rule, so determined to sell their most staple goods close to the cost line as are those who retail White Lead and Oil. And I know of no class of manufacturers who adulterate their goods so unblushingly and make the loudest claims for their purity as some manufacturers and mixers of Painters' Supplies.

Yet with all these drawbacks I do not think there is a more satisfactory branch of my varied stock than the Paint, Oil and Glass business.

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### I REGAN IN A SMALL WAY,

without experience, and added small quantities of different articles as I found a demand for them, till now J carry about everything called for in the line. I have pushed the little things, and advertised Paint specialties as well as the staple goods, and judging from my sales, my customers seem to agree with me that the Paint business belongs to the Hardware dealer.

I have had strong competition. Every drug store, most of the Hardware stores and some of the lumber dealers and racket stores in my town handle more or less Paint. The business is about as badly cut up as it well can be; yet I am getting my share of the business, and every year makes me better satisfied with my Paint, Oil and Glass business.

If you, Mr. Hardware Dealer, are not handling Paint and Glass, I would advise you to post up, make a start, feel your way carefully, go slow, and branch out as you see your way clear.

Many of the large, reliable Hardware Jobbers are handling a full line of Paints and Glass, and it is very convenient, and a saving of freight and drayage, to combine your Paint and Hardware orders. This enables 1

person to carry a smaller stock, as goods can be profitably ordered in smaller quantities than if Paint and Hardware are shipped separately.

It may be that Linseed Oil and White Lead are sold with little or no profit at times, and Mixed Paints and high grade Varnishes do not afford as good margin of profit, perhaps, as many articles in Shelf Hardware. Yet the little things, the specialties, the small package goods, household Paints, Stains, Enamels, Brushes and Glass pay a good profit. There is no waste, and little or no dead stock, if the buying is carefully done. These goods sell all the year around and money can be turned often.

I shall not attempt to give the experienced Paint dealer any instructions or novel ideas on the subject, but believe some suggestions may be of help to the beginner and help to convince him that the Paint business belongs to the Hardware dealer.

First, I would suggest that you go slow and not put too much money into the business at first, and by al' means

#### PUSH THE SALE OF THE LITTLE THINGS,

and you will make more money and work up a better trade, that will keep coming to you, than you can get by pushing the sale of heavy staples exclusively.

Buy small quantities to begin with, and aim to keep



G. L. MILES.

a variety rather than a large quantity of any article, and by all means do not allow a salesman to load you up with a large stock order. Feel you way carefully.

### THE ARTICLES NEEDED

for a Paint stock is a question for the inexperienced dealer to study carefully. Lead, Oil and Turpentine, of course, must be kept, but a big lot of Lead and Oil does not constitute a profitable stock and should not be bought if it prevents the dealer from putting in the hundreds of profitable little things that are needed in every home at all seasons. Better buy a few gallons of Oil at an advanced price and a small quantity of Lead, and the multitude of little things, rather than barrels of Oil and tons of Lead, and the popular sundries left out.

By all means prove to your customers that the Paint business belongs to the Hardware dealer by handling good, honest goods of the highest grades. A lasting, satisfactory business cannot be built up on adulterated Oil and "off" grades of Lead and Mixed Paint. There are many brands of Lead that are pure; there are a few brands of Mixed House Paints that are reliable. Better tie to these. I would select the Mixed Paint that is not only good but one that is well advertised, and is sold with the most liberal guarantee as to quality and durability.

It is possible to start in the Paint business without a

stock of Mixed House Paints, but if these are carried, do not buy too many colors. Body colors should be bought in gallon cans, with a few quarts and half gallons. Some popular colors may be safely bought in 5-gallon kegs, but I believe that larger packages should not be carried in Dark trimmers, light interior and porch colors should be bought more sparingly, and mostly in quart and 1/2-gallon cans.

#### MAKE A STUDY OF HOUSES.

and note those that look well and the colors that seem to meet the approval of the owners and the public. Avoid colors that are liable to fade or are cold and dingy. trade in House Paints will depend largely on the selection of your colors. If a house is improved in appearance by the application of your Paint, and the colors harmonize, it will influence others to buy your goods rather than invest in other equally good Paints that are of unfortunate

#### PROFITABLE SELLERS.

Floor Paints, Buggy Paints, Family Paints in small packages, Screen Wire Paints, Varnish Stains, Enamel Paints, Floor Stains, Carriage Top Dressing, Blackboard Slating, Paint and Varnish Remover, Bronze Powders, Bronzing Liquids, Gold Paint, Radiator Enamels, Bathtub Enamels, Graphite Paint, Crack and Crevice Filler. Floor Wax, Shingle Stains, Asphaltum, Iron Enamel, Roof Coating, Pitch and even common Coal Tar are all sellers and afford a good profit.

But do not put too much money into any one article. Better buy little and often until you find what your demand is. Some manufacturers put up small assorted cases of these articles, costing \$5 to \$10, which makes a convenient assortment for the inexperienced to buy. A small quantity of Paste Filler in 1, 2 and 5 pound cans, a few gallons of Liquid Filler, Shellacs, Japans and Dryers in 1/2 and 1 gallon cans, and a few 1-pound cans of the leading Colors in Oil are necessary for a good Paint stock.

Dry Venetian Red, White and Yellow Ocher, Whiting and Mineral Purple can be bought in 50 or 100 pound drums, or in barrels holding about 350 pounds. cost but little and pay a better profit than the general A small keg of Dry Red Lead and a line of Hardware. few pounds of the leading Dry Colors help to round out the Paint stock.

### DO NOT MAKE THE MISTAKE

of selling cheap Varnishes and Hard Oil. People expect to buy reliable Tools, Cutlery and Tinware at a Hardware store rather than at the racket and department store. It will pay to have the reputation for selling dependable Varnishes, and do not make the mistake of selecting the brands, no matter how good, which the mail order houses are able to catalogue at about the retailer's cost price. Keep the mail order catalogues on file and study them carefully.

A single gallon of good, outside Spar Varnish, a very little Coach and Furniture Varnish, a few gallons of good Floor Varnish, several gallons of good Interior Varnish and a few gallons of Hard Oil in quart, half gallon and gallon cans will give sufficient variety and stock of Varnish. Encourage the use of good Varnish. Keep in mind "that quality is remembered long after price is

## THERE IS A GROWING DEMAND FOR SHINGLE STAINS,

and a nice trade can be built up without carrying them in stock by the use of small samples of Stained Wood. It is very penetrating, and if carried in stock should always be kept in metal casks or cans.

The best help to the Paint salesman that I know of is a neat scrap book holding color cards of all the goods kept in stock, together with a brief description of each preparation, telling what it is best adapted for. Make it easy for your customer to buy Paints and Varnish and he, and especially she, will find many places that need brightening up.

## THIS BOOK OF COLOR CARDS

should also give rules for estimating the amount of Paint and Varnish required to cover a given surface; the amount of Lead or Dry Colors and Oil and Dryer required to make a gallon of Mixed Paint; and such other information as the Paint buyer will want to know.

This same scrap book can be a great help in selling House Paints, if it is so arranged that the perplexed house owner is aided in the selection of suitable harmonizing body colors and trimmers for his buildings. Assist him in selecting the colors he fancies and he will buy your Paint rather than from your competitor, who is not prepared to offer him an attractive combination of colors.

The salesman's work is not well done if he simply sells a bill of Paint. He should sell such colors as wear well and harmonize and look well and be a source of satisfaction to the owner and his æsthetic neighbors, and thus influence future sales.

## MANY DEALERS ARE FINDING IT PROFITABLE

to make a special effort to supply durable and satisfactory Floor Dressings and Varnish, and be able to advise the purchaser how best to treat both soft and hard wood The public wants this information and wants such Floor Finishes as will permit the use of more rugs and fewer carpets. Some of the much advertised Floor Finishes are ready sellers and seem to be quite satisfactory. Floor Wax and Weighted Waxing Brushes are being sold more largely each year.

## THERE IS GOOD MONEY IN BRUSHES.

and it is well to carry a good assortment rather than a large number of few kinds. The painter wants good Brushes and will use no other. He takes good care of them and they last well. Most people buy cheap and medium priced Brushes and let them dry up after once using them. The most profit is made on the medium priced goods, and, of course, more of these should be kept. \$10, \$25 or \$50 invested in Brushes will pay better profit than twice this amount invested in Tools and general Hardware. . If properly bought the Brush stock can be turned over many times during the year.

#### GLASS, BY ALL MEANS.

Hardware dealers should, by all means, handle Glass, even if they do not sell Paint. There is good profit in it, it is staple, there is little breakage, it never becomes dead stock and is a seller all through the year. Don't try to keep too many sizes. A study of the Glass list will show that several sizes cost the same per light, and, of course, one box will supply these different sizes without loss. Many more sizes can be made with very little loss by cutting down larger sizes.

It is not necessary to buy many expensive fixtures. good Glass board is almost a necessity, and a dozen 10cent Steel Wheel Glass Cutters are about as satisfactory for cutting Glass as a high priced diamond. Glass stock can be kept very nicely in the ordinary boxes, set on end.

It will pay to keep a few sizes of Ground and Chipped Glass, and, perhaps, a little Ruby Glass. Small samples of Stained, Colored, Figured, Enameled and Fancy Glass will cost nothing and will be the means of getting many orders for special Glass,

If there is any money in large Plate Glass, I have never been able to find it. The profit is altogether out of proportion to the risk in handling it.

In conclusion, let me repeat that the Paint business belongs to the Hardware dealer; sell good goods, get posted so you can educate your customers, and push the sale and create a demand for the little things—the specialties that your trade will gladly buy if you show them that they can buy them and use them without much trouble; stimulate the Paint habit among your customers and receive your reward in a larger business and increased profits.

### CREDITS.

## BY FRANK R. CURRIE, MASON CITY, IOWA.

This matter of credits is one common interest that permeates every kind of merchandising in the State of Iowa, in the greatest degree. Every style of merchandising counts this its greatest burden and greatest contention. Further than this, it is perhaps the one item of our business that 95 out of every 100 men cannot abolish. for reasons which are not asked for here. I expect there are 95 per cent. of the men here who could cut out the Stove business and yet make the Hardware business pay. 95 per cent. could discontinue the Furnace business and yet make a living; 75 per cent. could close up a Tin shop altogether and make just as much money, and so we could go on through the lines that make up our business, but can you eliminate that nightmare, Credits? I don't believe in the State of Iowa one-fourth of the Hardware dealers could cut out the credit business and live, do you?

Inasmuch as this subject is a universal part of the Hardware dealer's stock in trade, the success or failure of its rank and file must, to a greater or less degree, be traced to its successful or unsuccessful management. I can hardly believe that a poor collector ever made a success in the Hardware business; that is, a success worth speaking about, but I have had pointed out to me successful merchants, and invariably it was conceded, "He was a good collector," or, "Wise on credits."

#### THE MERCHANT IS IN BUSINESS

to sell goods; that is his way of making money. In this age of high living and strenuous life every purchaser does not always have in hand the "Lady on Silver" to supply his requirements. Mr. Merchant looks into the future and carries his friend on his requirements, real or imaginary, expecting the coming of a settlement date. He does this for a number of reasons: first, he wants the business; second, he wants a big business; third, he wants a bigger business, and unless, just here, he tightens on the reins and cracks the whip in the right place the end of the year may find him with more business and less money than is really satisfactory to himself, to Mr. Dun or Mr. Bradstreet.

As business grows and clerks increase in number, dangers more hazardous creep into the Hardware business, for every man that is a vender of merchandise for you has friends; Now, that is good, for it means business; but in parentheses we must add, also, credits; and my experience is that few clerks or partners who have nothing to do with the last end of the credit business have commendable discretion at the front end. There should be rules laid down for clerks and partners, as to who and how much they may credit; also if they be allowed to open accounts. In passing, I might say that improper and incomplete charges cause misunderstandings and losses in accounts, also losses in patronage, which are altogether without excuse.

A CHARGE SHOULD BE ENTERED PLAINLY AND COMPLETE, always stating, by a system of abbreviations, when possible, who ordered or got the article. This is only a small item, but classifies as starting right. Let us change an adage at this point: "Accounts well opened are half closed." I think this well taken. It is poor policy to hand over items of any amount promiscuously, saying nothing about a settlement date. This applies especially to items of size and to persons who have comparatively little knowledge or system in their business. Don't urge the man of lax business methods to buy on credit, and never, unless you make him understand that

## AT A CEBTAIN TIME YOU WANT THE MONEY.

In this connection I might add that a lease or contract does not end or eliminate all the trouble. If you will visit the rear door of the installment house and watch them unload their wagons as they bring back articles of every description, you will be convinced that a man's signature does not always collect the account, but you will find in many cases that your trouble has just begun; however, leases and contracts are good, and are one of the aids in the conducting of successful and safe credits.

Besides the education of your clerks and partners, there is the education of the masses; and if every merchant would put his shoulder to the wheel on this problem collections would be easier for all of us. It is a mistake to carry the impression to your trade that you have lots of money, and they need not be in a hurry to settle their accounts. This is all right for a few of you rich men, but the sooner you quit this practice the easier it will be for the big majority of us, who need the money, to look after our collections. A regular system of statements should be put in force and scrupulously followed. This will soon educate your trade to know that they are expected to pay your account.

I wish at this point to add one item that I have not heard much agitated, although it may be old to some of you. You will agree with me when I state that the

majority of successful Hardwaremen are endowed with the sixth sense in the conduct of their business—namely, Anticipation. Do we not anticipate the market? Do we not anticipate the season's wants? Don't we sometimes anticipate financial crises? To all of these, and more, you will answer, yes; but let me ask you

WHAT PERCENTAGE OF MERCHANTS ANTICIPATE CREDITS? Why don't we anticipate and get early returns on a man's credit standing when we are introduced to the new arrival in the city? I believe that the biggest item of neglect in the management of the credit department of our business is that we don't seek out our customers beforehand. Let your clerk hand in the name of the young man he met on his last evening out in society. Look up the new lodge member, or the man who joined your church last Sunday. Make this list as large as your mailing list; yea, there is a good place to commence to seek out sources of accurate information; make the list to include men and women, young men and maidens, the hired man and the servant girl, as well as the corporation and partnership. Have a complete list at your desk; require your men in your employ, by study, to know your instruction on individual names and act accordingly. After this research has established a conviction and resolution,

#### STAND BY IT.

Don't let the desire for business, friendship, sympathy or any other motive cause you to go back on your research and best judgment.

In closing let me say, in my judgment, the successful conduct of a credit business depends on its management in the sales department, as well as good methods in looking up and closing accounts. There are lots more fascinating books than our ledger, but sound business sense tells us that not only our bread and butter is there, but considerable pie and cake. I hope now that those of riper years and tried judgment can add practical experience to this hour which will give us all inspiration and good suggestions for the conduct of our business. While this edge of the business I take to be the least attractive of any, it must have attention.

## MAINE MFG. COMPANY'S THIRTIETH ANNIVERSARY.

THE MAINE MFG. COMPANY, Nashua, N. H., recently celebrated the thirtieth anniversary of the establishment of their business, which was commenced in a small basement room 50 x 40 feet in dimensions in Fairfield, Maine, with a capital of \$500. During the interval it has grown to a plant covering 81/2 acres, employing 200 people, producing Refrigerators of all sizes, a season's capacity aggregating 50,000, using about 4,000,-000 feet of Lumber and 1,000,000 pounds of Iron. Originally a folding Lap Board was made, then red Lawn Settees. In 1881 the plant was destroyed by fire, but was replaced in two months. Then they began to manufacture a good Sled for boys, the business in which soon grew to a volume of 75,000 Sleds a year. Subsequently they put on the market a Folding Camp Chair. in 1888 that they began to manufacture Refrigerators, which, by 1894, became their principal product. after this it was determined to remove to Nashua, N. H., on account of the superior advantages afforded, they taking the plant of the American Spool & Bobbin Company, to which large buildings both for manufacturing and storing purposes have since been added. John E. Cotton, the founder of the business, is the factory manager, and I. Frank Stevens the financial manager. The highest type of Refrigerator they produce is known as the White Mountain Grand, made of solid oak, with opal walls and stone linings. They also make the Maine Window Screen Frames.

THE CLARK-HORBOCKS COMPANY, Utica, N. Y., manufacturers of Fishing Tackle, have incorporated their business with a capital of \$100,000. The directors are George A. Clark, H. James Horrocks, James H. Horrocks and Edward D. Ibbotson.

# FACTORY COST AND BUSINESS METHODS.

## FACTORY AND OFFICE SYSTEM OF ATLAS MFG. COMPANY, NEW HAVEN.

The Rules for the Stock Department, which is divided into several parts, are given below as they appear in the Scheme Book. The description of the Office System begins next week and will be continued through several issues.

## PART VI.

## STOCK DEPARTMENT.—Page 60.

 The stock department includes:
 Page 61

 THE PACKING ROOM.
 " 62

 THE SHIPPING ROOM.
 " 63

 THE RECEIVING ROOM.
 " 64

 THE STOCK ROOM.
 " 65

## PACKING ROOM .- Page 61.

SEC. 1. The goods are to be packed as far as possible at piece work prices.

SEC. 2. It is the duty of the person in charge of the room to inspect the goods, seeing to it that no goods are packed which are not up to the standard in every particular. It is his duty to see that the help throw out all such imperfect goods.

SEC. 3. When the work is not done on the piece work basis, the time cards should show the quantity of each size and finish packed and the time occupied in doing it.

SEC. 4. In addition to crediting on the time cards of each packer the goods packed by her, a memorandum of the total amount of goods packed each day is to be handed to the office the following morning. This is for entry on the "daily record" and serves as a means for making up the work tickets of the japanners, platers, &c.

SEC. 5. When the goods have been thus packed and credited, they are to be removed at once to the stock room, so that there will be no danger of their being mixed with the current packing.

SEC. 6. Paper boxes and other material needed are to be obtained on requisitions from the office in the regular way.

## SHIPPING ROOM .- Page 62.

PACKING FOR SHIPMENT.

SEC. 1. In packing regular cases, the goods may be placed in the case directly from the bin; in packing assorted cases, the assortment called for should be laid out complete on the floor before packing, and the quantities checked on the order. This should be done before the goods are put in the case. Any changes made should be noted on the order when they are made. Mistakes will be avoided by doing it at the time.

SEC. 2. The goods should always be placed in the case so that the boxes will come flush with top of case, thus bringing spare room at the end of the case and not on top.

## CHANGES IN FILLING ORDERS.

SEC. 3. Foreign orders should be shipped as far as possible in exact accordance with their specifications, but if any change is made it should be in sending more, rather than less, of the quantity ordered of each size.

SEC. 4. On domestic orders a box or two may be omitted.

SEC. 5. It should be noted that the addition of one box of  $10 \times 12$  would count as much in filling up a case as 10 or 12 boxes of  $4 \times 5$ , and it would not seem like taking so great a liberty with the order to add one-half dozen  $10 \times 12$  as six dozen  $4 \times 5$ . On the other hand, a

<sup>48</sup> The daily record was described in last week's issue under Page 54, Sec. 34, in the Scheme Book.

customer very likely would prefer an extra dozen 6 x 8 or  $7 \times 9$  to one-half dozen  $10 \times 12$ .

#### PACKING.

SEC. 6. Before the cover is placed on the case the contents should be stenciled on the end, or, if more convenient, marked in lead pencil and stenciled after it is nailed up. This marking of the contents should never be delayed until after the case is nailed up.

SEC. 7. Compare each order "with the contents of cases as marked on the ends, and then bring the orders to the office as fast as they are completed.

SEC. 8. All cases larger than No. 12 are to be fastened with the metal corner irons, one on each corner of the case, midway between the ends. This should also be done on smaller cases, if necessary.

SEC. 9. All cases for export or long domestic journey,

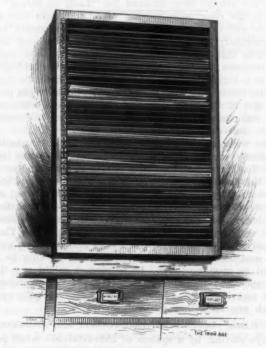


Fig. 27 .- Rack for Holding Stencils for Marking Cases.

where they are handled a number of times, are to be strapped in addition to the metal corner irons when the cases are larger than No. 11.

## MARKING.

SEC. 10. Mark the address of the consignee on the lower middle portion of the cover of each case. Put the Atlas Company's stencil on the upper right hand corner, the routing on the lower left hand corner, and special marks, if any, on the upper left hand; all to be done neatly and with good alignment.

SEC. 11. Place all the orders near the shipping door, those for the different depots by themselves. Put all for the boat on the truck, first; then, that for the Brewery street depot, and, last of all, that for the canal. See that the number of cases on the truck corresponds to that called for by the receipts.

## THE STORE ROOM .- Page 65.

SEC. 1. The idea of the store room is that all material and finished parts should be kept here; that these should be inaccessible except through the person in charge of the room and on requisition from the office.\*

SEC. 2. All material for use in manufacturing depart-

"The customer's original order is sent to the shipping room. This is found to be more convenient and satisfactory than copying the order, as is the usual practice in larger factories.

<sup>45</sup> The stencils are cut by a stencil cutting machine, and are kept in the case reproduced in Fig. 27. It will be seen that the shelves are marked alphabetically.

"A requisition slip, such as is shown in Fig. 7 in *The Iron Age* of January 14, or an order to manufacture, as illustrated in Fig. 17 in *The Iron Age* of January 21, serves as the order on the store room.

ment is received into the store room and distributed from there. The material is to be checked at once as to quantity, quality and other requirements, and a memorandum of same sent to the office.

SEC. 3. Finished parts made in the factory and received by the store room are to be accompanied by a memorandum 47 stating the quantity delivered and the number of the run on which it applies. This memorandum is to be checked and handed into the office.

SEC. 4. All material and finished parts are to be delivered to the several departments upon written requisition from the office, and, except in cases of emergency, no material is to be delivered without such an order, and then the proper order is to be issued as soon as practicable thereafter. The material called for is to be de-



Fig. 28.—Memorandum of Goods Delivered to Storeroom.

livered as promptly as possible, the items checked and signed for by the department receiving the same, and the order returned to the office for filing. In case it is not possible to deliver all the material at one time, the amount that is delivered is to be noted on the order and the same returned to the office and called for again when it is desired to deliver further installments of material, the amount delivered being noted on the order and signed for in each instance.

SEC. 5. The person in charge of the room should keep a memorandum of all material which is wanted on uncompleted requisitions, together with the number of the requisition upon which it is wanted, and as soon as such material is received the requisition is to be called for and filled.

SEC. 6. In case material furnished by the store room to other departments proves to be unsuitable for the purpose for which it is furnished, such defective material is to be exchanged for material that is all right. No order from the office is necessary for this exchange, but a report to the office is to be made of each exchange made, stating the quantity returned to the store room and the amount given back to take its place.

SEC. 7. Instructions are to be obtained from the office at the time of each exchange as to what disposition is to be made of the poor material.

SEC. 8. Whenever the stock of any kind of material or finished parts gets very low in quantity, an accurate inventory should be made and brought to the office for verification with the record there.

SEC. 9. All kinds of waste material, including paper, scrap from manufacturing departments, &c., are delivered to store room. The paper is to be baled, excepting that which is soiled badly. This is to be given to engineer to burn. All kinds of scrap are to be bundled whenever practicable.

N. B.—Sec. 1 refers to all departments as well as the manufacturing department, and covers paper boxes, shooks and all material, in fact.

(To be continued.)

## REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses:

From B. L. Neff, Bridgeport, Neb., who has purchased the Hardware, Stove, Sporting Goods and Harness business of Eller & Co.

FROM H. C. SWEET, Greenville, Iowa, who has succeeded Burglof Bros. Hardware Company, in the Hardware, Stove and Farm Implement business.

From Kingsdale Stove Company, Kingsdale, N. C., who have been incorporated with a capital stock of \$25,000 to do a general business in Hardware, Stoves, Tinware, Groceries, &c.

From Pluess & Miller, Newark, Ill., who have bought De Witt Van Tasell's Hardware, Tinware, Agricultural Implements, Stove and Buggy business.

From Bowerman & Clark, Highland Park, Cal., dealers in Stoves, House Furnishings, &c.

FROM C. P. LYNCH, who has bought the Attwood Hardware business, wholesale and retail, at Andover, N. Y. The stock covers Shelf and Heavy Hardware, Stoves and Tinware and Agricultural Implements.

From the Frank Colladay Hardware Company, Hutchinson, Kan., who have succeeded Frank Colladay and will continue the retail business formerly done, in connection with a wholesale department, in the interest of which three men are already on the road.

From Carter Hardware Company, Mayfield, Ky., who have succeeded Gardner, Green & Co., Messrs. Gardner and Green being identified with the new house. The company have made a number of radical improvements in the store, and will wholesale and retail Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Furniture, Queens Ware, &c.

FROM ALEX. F. MEYER, Falls City, Neb., who has purchased the Hardware business of Frank Uhlig.

From Franz Weiss of Mexico City, who is at present in New York. He will shortly leave here for Torreon, Mexico, where he will establish himself as representative of some large Mexican houses for that territory. Mr. Weiss will make a specialty of the sale of American Hardware, Mining Machinery, &c., and Contractors' Supplies. Catalogues and price-lists of such articles are requested and should be sent to 68 Broad street, where Mr. Weiss will make his headquarters while in New York.

## TRAP SHOOTING RULES.

THE UNION METALLIC CARTRIDGE COMPANY, 313-317 Broadway, New York, have just issued for gratuitous distribution a compact copyrighted booklet of 76 pages, each  $2\frac{1}{2}$  x  $5\frac{1}{2}$  inches, entitled "Trap Shooting Rules and Records." The first 39 pages refer to trap shooting rules, both as to targets and live birds, followed with chapters by leading experts on Division of Moneys, How to Organize a Gun Club, How to Manage a Tournament, Recommended Loads, A Dozen Don'ts, Equivalents of Powders, Some 1903 U. M. C. Victories and U. M. C. Expert Loads. At the end are blanks for scores and pages ruled for addresses.

AT a recent meeting of the stockholders of the American Axe & Tool Company, Jos. R. Mann, president of the Mann Edge Tool Company of Lewistown, and one of the most prominent manufacturers of Axes, was elected a director.

One of the blanks used for this purpose is reproduced in Fig. 28. They measure 4 inches square.

## Wisconsin Retail Hardware Association

## CONCLUDING REPORT.

S stated in our telegraphic report last issue, this, the eighth annual meeting of the Wisconsin Retail Hardware Association, was the most largely attended and the most successful in every way of any meeting in the history of the association. The greatest work accomplished at the meeting was the perfection of an organization for mutual insurance among members of the association, and before the close of the meeting members present had applied for insurance to the amount of \$350,000. Catalogue house competition and how best to meet it also received a good deal of attention, and a number of methods for inducing local trade to stay at home were outlined. The Parcels Post bill was discussed and resolutions passed calling on each member to write to his Senator and Congressman opposing the bill; also using his influence with merchants in other lines to do the same.

## Mr. Kletzsch's Address of Welcome.

Alvin P. Kletzsch, president of the Citizens' Business League of Milwaukee, emphasized the fact that Milwaukee was not a city of beer, as was commonly supposed, but that the volume of metal goods manufactured in that city was four times as great as that of the concoction "which made Milwaukee famous." The volume of metal goods manufactured in Milwaukee during the year 1903 was about \$87,000,000, out of \$252,000,000, the total value of manufactured products made in that city. He also stated that Milwaukee's lake tonnage exceeded that of any other city on the Great Lakes by 600,000 tons in the year 1903. The great growth of Milwaukee he attributed to the efforts of the men back of it, paying high tribute to the Hardware and metal industries for the energy which placed them by far in the first position among Milwaukee's industries. He asked the members to visit all the leading industrial plants, and stated that it was the sentiment of every Milwaukeean that the welfare of the city was inseparable from that of the smallest hamlet of the State, and that the towns and cities must move together in a compact body to advance the welfare, growth and progress of the State. He extended an invitation, on behalf of the Citizens' League, to the convention to meet the following year in Milwaukee.

President Findeisen responded briefly, making a humorous allusion to the fact that he had to be careful what he said, because he was a member of the Grand Jury, and the previous speaker was president of the Citizens' League.

## Address by Andrew Noel.

Following this address Andrew Noel of Chilton, the founder of the association, was greeted enthusiastically and made a few interesting remarks, as follows:

"I am as enthusiastic in behalf of your association, of which unfortunately, I can no longer be a member, because I have sold out my business, as I was eight years ago, when 85 of us met in this house to form an associa. We then believed that Hardware should be sold through Hardware stores, and not through catalogue houses, and we believed that a union of the dealers of this State could work many reforms in this direction and others that would be beneficial to all. Another point that I want to talk about is that of doing a cash-credit busi-By this I mean a method of doing business that permits the dealer to extend credit where credit is due and to insist on cash from other sources. I was 17 years in business before I sold out, and at the time of selling out had \$90,000 of credits on my books, but so careful had we been in extending these credits that inside of two weeks after the announcement of the proposed change every cent was collected except \$100. I was able to accomplish this in spite of the fact that I started into busi-

ness a green, young fellow, just over from Germany, because I had learned how and when to say 'No.'"

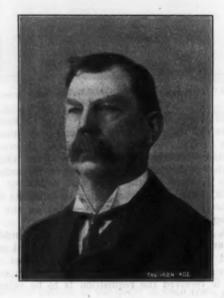
Mr. Noel was made an honorary member of the association on motion by John Hessel of Antigo.

The secretary's report, as published in our last issue, was read and approved.

Letters were read from members who were unable to be present, among them being the Montgomery Hardware Company of Wausau, who were prevented from attending by a recent fire in their store: Roach Brothers, Fennimore, who inclosed dues and an application for insurance; F. E. McGraw, Peshtigo, and J. Barlow, Ripon, who apologized for not being able to be present or to prepare the paper which had been assigned to him on the programme.

#### Parcels Post Bill.

The secretary outlined the attitude of the association toward the Parcels Post bill, which he regarded as purely a catalogue house move, and asked how many mem-



H. L. McNAMARA, President.

bers in the hall had acted on his advice and written to their Congressmen to vote against the bill. Only six hands went up. He stated that he had himself written his Congressman, and received a most unsatisfactory reply, the Congressman claiming that the bill was favored by the farmers, and intimating that the opposition to it on the part of the merchants had been very half hearted. On the other hand, Congressman Brown had written to James Montgomery of Wausau, stating that he would oppose the bill, but expressing the belief that no action would be taken on it this season. A resolution was passed asking each member to write to his Congressman and Senator at Washington as soon as he returned home. This resolution was passed after repealing previous action of the association which had instructed the secretary to send blank petitions to each member to be filled out and sent to the Congressmen, the idea being that a personal letter would carry much more weight than a printed form.

## Mutual Insurance.

Hon. A. T. Stebbins of Rochester, Minn., treasurer of the National Retail Hardware Dealers' Association and director of the Retail Hardware Dealers' Mutual Fire Insurance Company of Minnesota, addressed the convention by invitation on the matter of mutual insurance. He said:

I will not attempt to outline insurance laws in the varions States which have bearing upon the formation of your company, and I am not at all familiar with Wisconsin laws on the subject. My knowledge is restricted to Hardware insurance, and the more I know of it the more enthusiastic I become. It is largely through the insurance feature that we of Minnesota have the largest membership of any association. In 1897 we had a special law passed through the State Legislature permitting us to organize a mutual company. I had the honor of being a member of the Legislature at that time, and was thus permitted to be of assistance in passing this wise measure. In my town, for instance, notwithstanding the fact that in the history of old line insurance there only 3 cents in fire loss had been paid for each dollar of the insurance company, they arbitrarily raised the rate 25 per cent. In fact, each year the rate of fire insurance has tended upward until the burden is almost too great to bear. I am glad to say, though, that since the formation of our company, and the same is true in other States, old line companies have reduced rates in the hope of forcing us out of business, with what success you are all aware.

When our company was first formed there was naturally some feeling of doubt that losses would be paid, but a sufficient number of members were loyal to give the thing a good start, and before long all doubts were dispelled by actual results. The income of the State association for 1903 was \$48,434.31. Mr. Stebbins read the following figures to illustrate the success of the association in Minnesota:

AT CLOSE OF BUSINESS, DECEMBER 31, 1903.

Income in	1903.	
Cash on hand January 1	30,381.50	
		\$48,434.31
- Diaburaen	nents.	
Losses	\$5,155.87	
Return premiums	4,838.65	
Canceled and rebates	606.08	
		\$10,600.60
Salaries and fees, officers	\$975.97	
Salaries, clerks	445.00	
Taxes	265.67	
Rent	76.40	
Advertising and printing	395.55	
Postage	217.53	
Adjusting losses	168.21	
Legal expense	50.00	
Secretary, traveling expense	58.24	
Commissions	6.22	
General expense	353.93	
The same of the sa		£2 012 72

General expense	353.93	\$3.012.72
Balance on hand December 31		34,820.99
Insurance written, 1903		
Insurance in force		1,306,808.00
Reinsurance reserve		
Ratio of losses to premiums received Ratio of expenses to premiums received	, 17 per	cent.

### Total Business to Date.

				Lo	ess and
				rin ex	cpense.
Gros	s Gross	Per	Gross	Per	Per
premiu	ims. losses.	cent.	expense.	cent.	cent.
1900 \$8,390	0,91 \$1,294.	14 15	\$2,196.61	26	41
1901 12,578	3.61 2,344.	98 18	1,769.27	15	33
1902 19,708	8.03 7,752.	22 39	2,436.40	12	51
1903 30,381	1.50 5,155.	87 17	3,012.72	10	27
Totals. \$71,054	1.05 \$16,547.		\$9,415.00	14	36

The above figures show an increase of 57 per cent. in the business of 1903 over the previous year. It will be noted that the Minnesota association charges its members the regular old line insurance rate, but during 1903 rebated 30 per cent. of each premium paid.

Mr. Stebbins read a letter from M. S. Matthews, secretary of the Minnesota association, dated January 30, in which he stated that 75 new policies had been written during the month of January, making that the largest month in the history of the business, except last March. The total amount of insurance written during the month was \$134,300; premiums, \$2845.90, and the fire losses were only \$260.

Continuing, Mr. Stebbins said: It is to the interest of the Hardwaremen of every State, where laws will per-

mit, to organize these companies. It keeps us together. The saving in insurance alone will pay all costs of membership in the State association and costs of attending the conventions. An insurance plan offers an additional incentive to Hardwaremen to join the State associations. I believe that if you could send out your gental secretary to call on every Hardwareman in the State, with an insurance company such as we have in Minnesota, he could get 90 per cent. of the dealers in the State of Wisconsin to become members and to take insurance. That would be rather an expensive way of getting members, but it would be the best plan in the long run. As I have said before, the insurance feature is a lever, and the saving effected by this insurance will more than pay the cost of being a member of the association, but independent of all that, I pity the man who cannot come to the meeting of one of these associations and go home a better man, a broader man and a more successful business man than if he had not attended.



C. A. PECK, Secretary-Treasurer.

A general discussion followed Mr. Stebbins' address, remarks being made by Messrs. Peck, Murphy, Labuddy, Williams, Schlafer, Burkett, James and others.

### Report of Delegates to National Association Meeting.

Mr. Peck, the secretary, and Mr. Findelsen, the president, had acted as delegates to the National Association convention held in Chicago last year. Mr. Peck made a report of the proceedings of this convention and stated that delegates from 19 States held five sessions, all filled with enthusiasm and loaded down with good. "All State secretaries," continued Mr. Peck, "met in special session during the convention and agreed to interchange their printed matter and keep in close touch with each other. The National Association is, in effect, only an amalgamation of State associations, and each member of the State association is, by virtue of that fact, a member of the National Association. Nearly 5000 members are now enrolled in this way in the National Association. Mr. Corey, the secretary, is one of the most efficient men in this work in the United States.

"Digressing a little, I want to explain that it is not always an easy thing to get a Hardwareman to join our association. I have an instance in mind. I saw one of two partners, and as soon as I outlined to him the plan, he said at once, 'Write out the receipt.' His partner, who overheard the conversation, said, 'Wait a minute. What is the use of spending this money? What good have you done, and what can you do? What is the association, anyway?' I said to him, 'Do you take The Iron Aget' 'No.' 'Do you take the American Artisan?' 'No.' 'Well, then, my friend, it is quite possible that

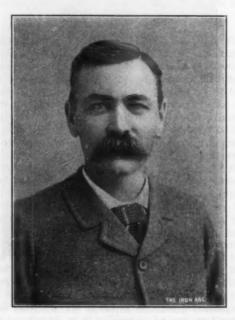
there are a whole lot of things going on that you do not know about. I will tell you one thing we have done for you. Did you know that the railroads of the State of Wisconsin have been carrying Montgomery, Ward & Co.'s catalogue for 10 cents and delivering it through their local agents?' 'Yes.' 'Well, one thing we have done, we have brought influence to bear on three chief railroads of this State by which an order has gone out stopping that practice.'"

#### Paper by L. M. Nash.

L. M. Nash of the Centralia Hardware Company, Grand Rapids, read the following paper on "The Relation of Jobber to Retailer:"

So important a subject as the one assigned to me, with my limited experience, should have been given to some jobber whose every day dealings with thousands of retail dealers should enable him to speak with something like authority upon the relations that do and should exist between the jobber and retail dealer, but my interest in our retail dealers' association prevents me from refusing the honor thus thrust upon me.

I believe the interests of the jobbers and retail dealers are so closely linked together in the process of transferring goods from the hands of the manufacturer to those of the consumer as to be almost identical. The retail



L. M. NASH.

dealer must succeed and make money if the jobber is to get good orders and get his pay for them. An up-to-date, enterprising retail Hardware merchant, who can buy everything in his line at right prices and at the same time look after sales, credits and collections, has no small job on his hands. I think it is a much harder vocation than that of the manufacturer or the jobber. A jobbing house has a force of experienced men for each department, with a buyer for as many lines of goods as he is capable of properly caring for, who is supposed to know the quality, reputation and price of nearly everything in this branch of trade. He can act as a primer for both the retail dealer and the manufacturer. Any complaint coming to the house from the retail dealer is referred to the sales department, and the character of the difficulty is soon sifted, and the jobber is then in position to bring the complaint to the manufacturer.

As you have all learned by experience, this is a busy season of the year, when the retail dealer has his hands full with closing up the previous year's business and looking about in a general way for the demands of the coming year's trade. He hasn't much time for details, and the jobber can help him here effectively by bringing to his attention all the new, desirable and salable things or lines in the trade that would help to increase his sales and profits during the coming year. I believe it is very essential that the retail dealer spend a few days every

year in a large jobbing house, because new lines of goods are being added which are more profitable than the old, regular lines that have been a part of the business from time immemorial. The dealer should know the goods and the kind that is being advertised and sold to keep abreast with the times.

#### WE MUST SELL A GREATER VARIETY EACH YEAR.

The dealer who sticks to the old line of Hardware and allows the other fellows to handle all the side lines, such, for instance, as Harness, Paints, Cutlery, Yankee Notions, &c., will find his sales diminishing every year and income smaller.

No jobbing house should, through its salesmen, try to influence the retail dealer to buy heavily goods that he knows will not sell readily, neither should he "tuck on prices" to a customer unfamiliar with the goods and prices. He may do this for a while successfully, but in the long run he will be the loser. Nearly every salesman on the road knows when he is taking an order whether or not his customer is buying just what he should buy. If he suggests taking more of one kind or less of another he should do so conscientiously, and the dealer should give his suggestions careful consideration. The salesman is representing the jobber and is supposed to be primed on all the details of the coming year's trade.

I do not favor buying goods from a jobber that caters to or sells goods to anyone outside of the legitimate trade, neither do I think a dealer is justified in giving the jobber the "go-by" who protects him by refusing to sell to customers or department stores. The jobber has goods to sell and is going to sell them. If the retail dealer doesn't patronize him he won't lay down and let his goods rust on the shelf. Then I say why not work harmoniously together. Instead of buying from manufacturers' agents in large quantities, buy in smaller quantities from the jobber as your wants require. Let the jobber and retail merchant work together. Ask the jobbers to come and make addresses and give suggestions at our meetings and act as leaders among us. They are in better position to protect us through the manufacturers than we are ourselves, and both the jobber and retail dealer will be benefited by working in closer touch with each other.

The time for selling goods at a profit of 30 or 40 per cent. is past. The success of both jobber and retail dealer lies in the volume of business done. When the jobber sends you a cut and description of an article, study it well, learn the truth about it, put it in print and go at it with as much enthusiasm as if it was the first article you ever undertook to sell.

## AN ESSENTIAL POINT IN SELLING GOODS

is to learn all there is to know about the goods before attempting to describe them to the customer. Your being "loaded" gives your talk with the customer some effect. You should also know something about similar articles kept by competitors and should develop reasons why your goods should command the buyer's preference. If you have salesmen you should outline methods for them to effectively present your goods to customers.

I am full of the idea that retail dealers and jobbers would both be greatly benefited by coming into closer touch with each other. This association has now had at least one retail dealer's ideas on the subject, and in closing I want to suggest that next year we hear from the jobbers along these lines. They probably have given much more thought to the subject than the retail dealer, and might be able to make suggestions as to ways and means of getting together for profit and the advancement of all the interests in our line of merchandise that would be wholly new to us. I would suggest that several jobbers be invited by this association to meet with us next year and give us the benefit of their ideas on the subject.

The treasurer's report was referred to the Auditing Committee, Mr. McNamara, chairman, and the report was approved and the Auditing Committee discharged.

## Hospitality of Milwaukee Jobbers and Manufacturers.

An invitation was read from jobbers and manufacturers of Milwaukee, named below, requesting the pleasure of the company of the members of the association at the Academy Theatre, Wednesday evening, February 3, to see the play "Sporting Life," and also to the Alhambra Theater, Thursday evening, February 4, to witness "When Reuben Comes to Town." The tickets of these entertainments were distributed through the generosity of the following houses: John Pritzlaff Hardware Company, Brand Stove Company, National Enameling & Stamping Company, Lindsay Brothers, Speich Stove Repair Company, A. J. Lindermann & Hoverson Company, James E. Patton Company, William Frankfurth Hardware Company, Fuller-Warren Company, Geuder & Paeschke Mfg. Company, Washington Cutlery Company, L. J. Mueller Furnace Company, R. J. Schwab & Sons Company, Badger Nail Company and Milwaukee Corrugating Company.

#### Question Box.

QUESTION 1. What is the cause of fire running up in the reservoir of a Base Burner Stove?

Answer 1. The Stove is imperfectly mounted and there is a leak in the magazine.

ANSWER 2. Sometimes the use of too large coal produces this effect.

Question 2. How do you keep good Axe Handles from warping?

Answer 1. I keep my Axe Handles in a sheet iron drum in the dark and have no trouble.

Answer 2. I find that by hanging each Handle by a separate string, so that it swings free, the trouble can be avoided.

ANSWER 3. I dip my Handles in a tank of kerosene with good results.

ANSWER 4. I keep my Handles in a cold room and the trouble is avoided. The trouble is that Handles are often placed where heat is greater on one side than the other, making the warp inevitable.

QUESTION 3. What is a good method of preventing customers from sending to catalogue houses?

ANSWER 1. I find good results by promising to send for an article that I have not in my own stock, which may customer wants, and attending to it immediately.

Answer 2. I keep catalogues of the mail order houses in my store and study them carefully, and I am usually able to convince my customer that it is impossible to secure first-class goods at the low prices quoted. In many other instances I find that my prices are actually lower than those of the mail order houses, and that the descriptions and illustrations are misleading.

QUESTION 4. Why has this association not a list of unfavorable manufacturers and jobbers, firms who sell to catalogue houses or to the trade direct?

Answer 1. By Mr. Stebbins of Minnesota: We got up a "pink list" once in our State, but found it very unsatisfactory, because jobbers who were fair in one part of the State may have been unfair in others, depending upon the action of their traveling men. We found also that the jobbers would write to us and make all sorts of promises, and in two weeks we would come across open violation of these promises. We concluded that each dealer must solve this problem for himself.

Answer 2. By Secretary Peck: All members of this association get copies of the "National Bulletin," and in this you will find the results of their investigations upon receipt of complaints. The National Association asks us all to write anything we discover that is in violation of legitimate business methods. The trouble is, there is a lack of understanding and loyalty among ourselves, and it is an open question whether we had better publish this list until we are a little closer in touch with each other. Meanwhile, gentlemen, I want each member to make all complaints to me.

Mr. Nash suggested, in this connection, that it was rather in the province of the State Association than the National Association to take up the matter of unfair jobbers.

QUESTION 5. BY ROY MILLER OF ALMA CENTER: If we, as Hardware dealers, make such strong objections to our customers sending away for goods, should we not insist that our own families trade at home?

This question led to a general discussion, in which Mr. Miller further stated that as postmaster of his town he had knowledge of the large amounts of money that were going to the mail order houses from the families of merchants who were one and all supposed to be fighting the mail order competition.

This led to a renewal of the catalogue house bugaboo, members one after another telling how they had been able to meet competition in most cases. O. P. Schlafer of Appleton, after relating an unfortunate experience of a local contractor in buying Sash Weights from a mail order house, stated that the worst trouble they were experiencing in their town was with Stoves and Ranges, and that they were watching the freight offices and were keeping a list of mail order Stove customers, and, after a time, they would call on them and would get one of these Ranges and place it in their window, stating plainly the name of the mail order house from whom it had been received and the cost paid, and comparing it with Stoves of other makes.

A member stated that, averaged through and through, the farmer who bought all his goods through the mail order houses paid more money than one who traded at home. As an instance, he stated that Milking Tools that were sold locally at 85 cents and \$1.10, according to size, were listed by the mail order houses at \$1.25 for both sizes; that electrically welded Fence Wire averaged



E. H. RAMM, Member Executive Committee.

5 cents per pound, if bought from the mail order houses, and that they themselves were selling the same Wire, delivered, at 4 cents.

## THURSDAY MORNING SESSION.

At the opening of the session E. K. Cunningham of Berlin read his paper on "The Retail Hardware Store," which was published in last week's issue, after which the matter of insurance was again taken up.

## Mr. Schlafer on Mutual Insurance.

O. Schlafer of Appleton delivered a short address on insurance. Said he:

Thirteen years ago we put up a solid brick building, with wall 28 inches thick at base. 16 inches for the first two stories and 12 inches for the third story, with no windows in the sides. We did everything in our power to make this as fire proof as possible, including electric At that time our insurance rate lights instead of gas. was \$10 per \$1000 on the building and the same on the stock, and continued on that basis for eight years. Three or four years ago the insurance examiner went through the place and reported that everything was in shape except the electric wiring, which needed improvement. at once sent for the best expert in the city and had him rewire the building at a cost of \$100. Immediately following this our insurance rate was raised to \$12 for both building and stock. Last year the insurance people raised the rate on stock to \$14.50 and left it at \$12 on

the building. This was simply an arbitrary ruling on the part of the old line companies and we could not help ourselves. We kept our gasoline in a separate building known as our warehouse, on which we paid \$2.50 excess premium, or \$12.50 per year excess for the privilege of keeping two barrels of gasoline in steel tanks in one part of the building. To save this premium we built a special gasoline house of brick and steel, containing not an inch of wood, and applied for a reduction in rate on our ware-The examiner looked the warehouse over and said that we would have to put shutters on the upper windows of the warehouse before he could reduce the Then I got mad and told him that every time we rate. did anything to decrease the risk he raised the rate, and told him that he would either insure us at \$10 on this warehouse or not at all; that we preferred to carry our own insurance, rather than to submit to arbitrary treatment such as we had been receiving, and I tell you, gentlemen, that it was not very long before those insurance fellows came down and allowed us the \$10 rate. They soak us for all we will stand, and when they see that they have overdone it they come down.

The formation of our own insurance company will not only save us money on the new insurance, but will enable us to cut down the rates on the old line companies. The fire losses in the Minnesota company are only 38 per cent. of the total premiums. I consider a Hardware risk better than any other line of merchandise. Goods are less inflammable, and when a fire does occur a smaller proportion of goods are destroyed than in any other business. Why, then, we should be charged the same rate as dry goods and other stores carrying inflammable material is more than I can tell. Published reports make it evident that the profit of the old line companies is 65 per cent. Where does this 65 per cent. go to? If we can do our insurance business on as small a percentage as the Minnesota association can, will it not pay us to organize a company of our own? Any man who is loyal enough to be a member of this association is a good risk. I have been paying insurance for many years and have had but one loss and that very slight. The loss would bave been great had I not been equipped with fire exand the prompt use of these stopped the spread of the fire. The Minnesota Hardware Insurance Company paid us back 30 per cent. of what we had paid them in premiums last year. We can get only \$3000 there, and as soon as Wisconsin forms a similar association we will take out the maximum amount in that

## Address by an Insurance Expert.

Wm. Wright, secretary of the City of Jefferson Mutual Fire Insurance Company, said that he heartily concurred in most of the remarks of the previous speaker, but wished to explain that the electrical wiring of the building rather increased than decreased its risk, for, as a matter of fact, 40 per cent. of the fires of the present day are due to defective wiring. In most small towns the men who put in the systems are ignorant of both the essentials and principles of the business. They do not know, for instance, how many amperes a No. 8 wire will carry. A wire has its limit of capacity the same as a steam pipe, and as soon as you overload a wire the insulation becomes carbonized, leaving your wire covered by a piece of cotton. When this wire becomes heated, short circuit and fire is the result. Prosperity is another cause of fires. Business men will work overtime, sometimes all night. They are so engrossed in attending to the rush of business that their place of business is neglected, and even though not naturally careless, they permit the more urgent work of exchanging goods for dollars to delay the necessary fire precautions. Another cause, and a great one, of fire loss is overinsurance, and in this case the loss falls heavier on the man insuring than the companies. The man who carries \$120,000 in insurance on a property that is worth only \$100,000 makes a mistake. He pays for more insurance than he ever gets. You may depend upon it that the companies protect themselves. Among other things they demand that the insurer shall produce an inventory of stock on hand before the fire.

## WHO MAKES THE RATES?

There seemed to be a great misunderstanding as to who makes the rates. The local fire insurance agent may throw up his hands and say that he is helpless; that he has to conform to the rates that are made by his com-This is not true. The power of making the rates lies with the local representative of the company, and his company always back him up when he raises the rate, and he raises the rate as often as he thinks he dares, because it is money in his pocket, as he gets a bigger commission on a \$20 than on a \$10 premium. The law specifically prohibits insurance companies from forming a combination, or agreement, either by themselves, or their agents or representatives, to form a compact to maintain or establish rates. This is evaded by what is known as "field clubs," formed by the companies. The agents of various companies join these field clubs and agree on rates to be charged for certain buildings. When they are in doubt they send to their companies for an experi tariff rater, who visits the town and advises such rates



O. P. SCHLAFER, President Insurance Company.

as will enable the company to make a profit. His finding, however, is only in the nature of advice, as the rates he makes are not binding by the insurance company until after approved by the local agents in these field clubs. Each agent pays his pro rata for the salary and expense of the expert rater when he is in town. As a matter of fact, it is right that the rate should be made by the local agent, as the company know neither the physical nor moral hazard of John Doe, and the agent is familiar with both. When any agent says he has nothing to do with fixing the rates, ask him for a copy of By-law No. 3 of the local Board of Underwriters, and see what he says. The city of Wausau pays \$20,000 a year in premiums to insurance companies and has not had a dollar of loss thus far, and still the rates went up from 25 to 100 per cent., according to location. On the other hand, the old line companies will cut the rate to 5 cents on the dollar if necessary to freeze out a mutual company. If you succeed in doing nothing else than forcing the old companies down; you will have made a splendid saving of money.

## CARELESSNESS IN BUYING INSURANCE.

Mr. Wright said that 90 per cent. of the fire insurance policies written are practically void. This is due to the carelessness of the insured in not reading and understanding the terms of the policy. You should buy insurance just as you would buy real estate. Do you take the real estate agent's word for the validity of the title of the land you are going to buy? No. You investigate and have the title written up to date, and that when you are only buying a piece of land as an investment. While

on the other hand, when you are insuring your very business, the life of which means your entire success or failure in life, you hastily glance over the policy, see that the amount is right, and shove it in your safe. He knew instances where men paid for policies which were blank. In a large percentage of the policies the property is not correctly described as to location or lot number. The time to adjust fire losses is before the fire, and not afterward. Before a fire your agent can make any corrections or changes in the policy that are necessary. After the fire his hands are tied absolutely.

Mr. Wright's address extended over two sessions and was followed by many questions on the part of members of the association, which were answered promptly.

## THURSDAY AFTERNOON SESSION.

The following resolutions were presented by the Committee on Resolutions, consisting of A. H. Sheldon, H. C. Schofield and R. C. Murdock:

Resolved. That whereas Chas. Bullwinkle of Jefferson and Wm. Krueger of Neenah have been called away by death, we as an association hereby tender our sympathy to the bereaved families, relatives and associates, and instruct that this resolution be spread upon the minutes and a copy sent to widows of the deceased.

deceased.

Resolved, That we tender a vote of thanks to the proprietors of the Republican House for courtesies shown for our comfort and in furnishing a hall free of charge for our meetings.

Resolved, That we extend a vote of thanks to the National and Minnesota associations for their courtesies in sending delegates to represent them at our convention.

Resolved, That our association extend a vote of thanks to the

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press for courtesies in reporting meetings.

Resolved, That we thoroughly appreciate the successful efforts made by the Hardware jobbers and manufacturers of Milwaukee, who have so pleasantly entertained us while here, and that we extend our heartfelt thanks.

#### Curiosity Shop.

A member presented to the association a Door Bolt taken from a French mission church in the northern part of the State that had been in service for more than 100 years. Another presented an English made Level of considerable antiquity, and H. N. Gay of Milwaukee announced that if any members were desirous of starting a collection of curios, or had any which they wished to give to the association, he would see to it that they were put in the hands of a custodian who would take charge of them and have them exhibited at each meeting.

## Good Will Among Hardwaremen.

James A. Wilkie of Fond du Lac read the following paper on "Good Will Among Hardwaremen:"

If good will among men was not destined to be a prime factor in regulating the affairs and lives of nations and individuals throughout all the ages, the Christmas message of 1904 years ago had long fallen flat and ceased to be resounded annually in every corner and quarter of the civilized globe. Wherever good will is found, peace reigns, prosperity rules. But once withdraw good will, and petty jealousies creep in and grow apace, doubts suspicions become accusations and peace is destroyed. The war cloud would not be hovering upon the horizon between Japan and Russia to-day were there not a serious lack of good will on part of one or both countries involved. Good will is the keynote of political, social and business harmony.

But I am not here, my friends, to give my views on the friendly or unfriendly relations of Russia, Japan or Corea, nor yet of the lack of good will existing between capital and labor, but to speak especially of good will among Hardwaremen-the Hardwaremen of this association, of the State, of the various manufacturers, the jobbers, the retail dealers and the clerks in our employ, who will, no doubt, in the course of time enter the ranks as Hardwaremen. Is the good will there? I think so, in large quantities. How can we increase it? If it is not present, why not? How can we engender it, and

## DO AWAY WITH A HOSTILE SPIRIT

that is in itself a menace to the progressiveness of our association? In the first place, it is a great pleasure and satisfaction to tell you that good will among Hardwaremen is the only thing that makes a gathering of this kind possible. Consider for a moment. Here are assembled

men who are daily engaged in competition with one another-all striving for the same object, the dollars, and yet retaining friendly relations and good fellowship with all. This is as it should be, and shows that we have attained, to a degree at least, the beneficial results desired by our organization. The object of the association should be the promotion of more friendly business relations and mutual confidence and good will with each other, and with manufacturers, jobbers and other constituents of the Hardware trade.

It will be well, perhaps, to analyze the possibilities of good will among Hardwaremen. Let us begin with the manufacturer, for he plays, I was about to say, the most important part in the trade; but that is not so. For where would he be without the jobber and the retailer and their good will?

The manufacturer has certain products which must be distributed to the consumer-certain new articles just out, for which a demand must first be created. To do business tact and integrity are required to secure good will of both jobber and retailer. It is the legitimate field of the retailer to introduce the article and help create the demand. It is the province of the jobbers to



JAS. A. WILKIE.

fill all demands of the retailer. It is the privilege of the manufacturer to supply the jobber. Each has his share of the work and proportionate profit when good feeling abounds. But let the manufacturer swerve from the straight paths of business, as he sometimes does, and the charm is broken and confidence is destroyed. He cannot sell the jobber a large bill of goods, and then send out his agent among retailers, catalogue houses and department stores to sell the same goods at a cut price, and expect to perpetuate the doctrine of peace and good will at the same time. Good will and co-operation go hand in hand. You never find co-operation linked with ill will.

It is a poor rule that won't work both ways, and what holds true of the manufacturer in his relations with the jobber is applicable also to the jobber in his dealings with the retailer. As far as possible it is his business to protect the retailer. This he cannot do by systematic soliciting of trade from the consumer, nor is this method productive of any good will. It is the business of the jobber or his representative to protect the retailer by assuring him of the lowest prices in all present transactions, together with a guarantee for all future shipments.

## CREDITS AND THEIR ABUSE.

Don't imagine by what I have mentioned that I consider the manufacturer and the jobber the only ones who are responsible for the friendly or unfriendly relations among Hardwaremen. The retailer has obligations as well-great ones, which must not be shirked. And I will just mention one way by which he can secure the everlasting good will of the jobber, and that is by paying bills promptly. There are some firms doubtless who by reason of a large capitalization are enabled to carry their customers to an extent quite beyond the ability of others. There are others, however, whose credit depends largely upon the promptness with which they meet their own bills and who feel that they cannot afford to ignore any element of risk. There is no question about it—if the pernicious system of credits in use by manufacturers, wholesalers and retailers to-day could be eliminated it would improve every feature of business and make for good, healthy commercial prosperity. Therefore, I say, pay your bills promptly. You may not be able to discount them; that's your own loss, but endeavor to meet them as they mature.

#### ATTITUDE TOWARD THE TRAVELING SALESMAN.

Now, as regards the traveling man, the representative of the Hardware business, he is certainly entitled to a large share of our good will. Consider how many times a tired knight of the grip enters a place of business, getting the scantiest courtesy from the grouchy retailer. Maybe business has not been the liveliest, maybe the retailer has been out all night. Maybe his store is already overstocked. Is that any reason why he should deliberately turn his back upon the traveling man, keeping him waiting all day with no intention of buying? Some men use this snubbing process, thinking it makes it easier to turn the representative down. It is a poor way and productive only of humiliation and hard feeling. And why should the salesman bear the brunt of the dealer's boorishness? He is not responsible for business situations. The representatives of jobbing houses are entitled to all courtesy from us. They are doing a legitimate business in soliciting our trade. They do not expect to force it. It is to be admitted that some are very tenacious and determined to get an order, but remember that that very persistency is one of the requisites of a good salesman.

If the dealer does not care to buy he ought to say so promptly. He can be firm, courteous and couch his refusal in such a gentlemanly manner that the traveling man will feel no frost, no humiliation, and depart with the impression that he has been treated like a prince. Good will will be the result of such treatment, but not the only one. You cast your bread upon the waters and find it again after many days, perhaps, in various little attentions to the particular wants of your trade, from the salesman who has become your friend and well wisher.

## LOCAL OBGANIZATIONS.

And now a word concerning local relations. What will promote good will among the Hardwaremen of our own little burgs? Nothing can guide a man in friendly deeds like a friendly spirit; a kindly heart is a better guide in the transactions of business or social life than any manual or book of etiquette. Men of high purpose and noble impulses go forward in their business and life without fear, trusting to their own good sense and conscious integrity and good will to perform the duty of every hour. Business men everywhere realize that never was there a time when competition along all lines of trade was more fierce than it is to-day. Chances of successful business growth are fewer, profits reduced to smallest margins. It is this fact that makes it necessary for the retailers of any locality to establish a basis of good will. There is only one way to establish results, and that is by well directed effort. It is all well enough to preach good will, but something more is necessary. There is need for reform in business ways to improve it. And it seems to me that the key to the situation is local organization.

Let each retailer of Hardware in your city get into line for concrete action that will develop trade. Let him affiliate with his business competitors, treating them as he would customers, co-operating with them on all business matters, exchanging views and opinions, doing nothing underhanded to get away competitors' trade; but by dropping all petty jealousies and bickerings become friendly allies in the Hardware business.

We all know this is the age of "any way to get there,"

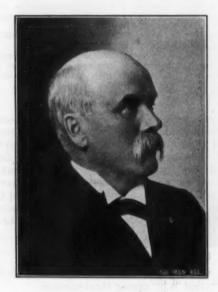
but I still believe in the old adage of "live and let live." I believe unity along this line of action would accomplish wonders in building up friendly relations and hearty good will among local dealers. The surest way to protect the interests of the Hardware business is for dealers to protect each other. I am not in favor of iron clad combinations on prices, but a mutual understanding on the prices of staple goods would not be amiss. Unity is strength. In strength and influence there is enthusiasm, and, as I said before, good will and co-operation work hand in hand and make for success.

#### STATE ASSOCIATION.

Finally, friends, I want to say a word about our State Hardware association. Through it we have gained a national reputation and interest. It has not only acquired the confidence and support of the retailers directly interested, but it has also gained the respect and good will of manufacturers, who were inclined to be rather suspicious of our motives at first. They now realize that the association is pervaded by a spirit of fairness to both manufacturer and jobber, regarding their interests as existing side by side.

#### THESE ANNUAL MEETINGS

of the Hardwaremen of the State are most pleasurable and profitable to me. I look forward to it and plan my



A. T. STEBBINS.

work to be here. I enjoy and am benefited by meeting the various dealers, and feel that our association is a good, practical institution. I am sure you will acknowledge that it has given to other members as well the benefits of individual experience, thus involving improvement in business methods. It has protected the interests of the weakest member as well as those of the strongest. In short, the Wisconsin State Retail Hardware Association has raised the standard of business integrity, and as an advertiser it has helped, at least, to put the Hardware trade on a level with any enterprise in the United States.

## General Discussion.

This paper led to a general discussion of the importance of a friendly understanding between competing merchants in every town, and also to the many advantages that arise from the formation of business men's associations. Among these advantages were the possibility of early closing, checkmating of the career of the commercial deadhead, the abatement of the evils of price cutting on staples, and the general uplifting in tone in business, due to a better understanding between each merchant and his neighbor.

Byron E. Walter of South Milwaukee spoke of the advantage of local business men's associations in the matter of credits, and said that his experience had been that the greatest mistake a merchant can make is to be afraid to demand payment from a customer for fear that he will lose him. Said he: "The madder you get him the better customer he will be. I want no better customer than the man who slams his money down on the counter and bangs the door as he goes out, because he is sure to come in again and pay his money every time."

#### GOOD FELLOWSHIP AND OBGANIZATION.

Mr. Stebbins illustrated the advantage of good fellowship and organization by giving an account of the success of the meeting of jobbers and manufacturers held in Philadelphia last year, at which representatives of retail interests were present on invitation, in which manufacturers and jobbers who had been selling to catalogue houses had agreed to use their utmost endeavors to curtail that sort of thing, terminating contracts at the first possible moment. He said: "The trouble is we have sat still and let manufacturers go past us to our consumers, without saying a word. Suppose, for instance, a manufacturer makes \$1,000,000 worth of goods a year, and the catalogue house come to him with a proposition to sell them \$100,000 worth of goods at figures that will permit them to undersell any retailer. A \$100,000 order, or 10 per cent. of his year's output, looks good to him, and he concludes that he can easily dispose of the other nine-tenths through his traveling men. When we see these goods in mail order house catalogues and we tell the jobber that we will buy no more such goods, the jobber very soon tells the manufacturer, and the manufacturer soon realizes that it is to his interest to sell through established trade channels. Manufacturers have an idea that the retailer can do business on 5 to 10 per cent. profit, but I tell you, gentlemen, that it costs us nearly 20 per cent. of our gross receipts to do business. Our sales are necessarily small.

#### COLLECTIONS MADE EASY.

It has been suggested here that Hardware dealers of each town form a little local union to guard against price cutting, but my experience has been that this is almost impossible, because each merchant has some competitor whom he refuses to affiliate with; but one thing that we did in Rochester (Minn.) was to form a Merchants' Association. This association was formed at the time the "green stamp" business came up. Those fellows visited our town, and took under their wing 15 or 20 merchants, leaving 47 outside. We outsiders soon discovered that our business was being injured, and we started a stamp business of our own. Then came along the red stamp man, who offered to take our stamp store off our hands. We accepted his proposition, and this led to the formation of the Merchants' Association. It was a great success from the start. One thing we did—we got up a pink list of people of doubtful credit. Blanks were printed on which each merchant solicited payments for accounts due. When such amounts were not paid, the secretary of our association was notified, and he sent out a second notice with the names of all the merchants in town on it, to the effect that unless the account was met credit would be refused by all members of the association. This had a magic effect, and our business losses have been reduced to almost nothing.

## WORKING WITH THE FARMER.

The same association sent out letters to every farmer in the county as well as to people in town, calling attention to the fact that in the long run catalogue houses are not the friend of the farmer. We demonstrated in this paper that if all the people in the county would buy of the catalogue stores there would be no stores and no town. Recently the farmers were proposing to form a Farmers' Alliance. We all know that the farmers' interest is our interest, and we sent out an invitation to them, telling them that if they wanted to organize we would furnish a hall, and our secretary would do the corresponding. Our proffer was accepted, and next week the farmers will organize under our auspices.

## The Retail Merchant as an Educator.

J. C. McPherson of the Frank Leach Hardware Company, Oshkosh, Wis., read a paper on "The Retail Merchant as an Educator," which follows:

To be a successful merchant and educate your customers to know that you have just what they want at the

right price, you must first educate yourself not only to the every day needs of your customer, but also in the higher class of goods that will satisfy him in regard to price as well as quality.

#### STOCK SHOULD BE VARIED.

I have always found that only first-class goods will do this. I think it is a good plan to vary stock, though standard goods will catch by far the largest percentage of the people. When you have done this, you are ready to begin on your customers. You can do this by advertising in your newspaper, by hand bills, personal letters, and by constantly calling your customers' attention to the superior quality of the article you are selling.

#### SHOULD GAIN CUSTOMERS' CONFIDENCE.

Never advertise or quote prices which you are not willing to sell at. Strive to gain the people's confidence; let them know that they can rely on your word. When you have thus gained their confidence you can say, "I am a successful educator." I think it is a good plan to try to educate your customers to buy goods in advance, such as Binder Twine, Fencing and other lines which you buy in advance. You can often do this by guaranteeing the price, the same as a jobber or manufacturer does to you.

#### EXTENDING CREDIT.

There is another point which I wish to call your attention to—that is, extending credits. I think you will all agree with me when I say we extend credits too long to be profitable. This can be obviated in a great measure by having a thorough understanding when you sell the goods as to the time you are willing to extend credits. If not paid promptly, call your customers' attention to the terms, either by statement or calling on them personally. I find it much easier to collect an account that has run only 30 to 60 days than one that is from one to two years old.

#### MEET CONDITIONS OF TRADE.

Do not think because I have called your attention to a few points which I think are right that every merchant can follow any line of procedure and not vary from it. Different localities and conditions call for different modes of doing business. Every merchant must meet the conditions of trade as they arise.

## HIGHEST TYPE OF ADVERTISING.

If something new in Hardware is offered you, if it has merit, buy it; make special effort to get such goods in the hands of the people who have use for them. There is no higher type of advertising to my mind than having a lady drop in on her neighbor and, seeing her using some household article, ask, "Where did you get it?" "Why, of Findeisen Bros., and it is just what I have wanted; it's a new thing." The first lady makes up her mind she must have one of the same kind, and 99 times out of 100 she will go straight to Findeisen Bros. and get it. It is often the case that a merchant who first introduces an article to the people sells more of them than all of his competitors.

These points seem to me to be education in the retail Hardware business.

## Insurance Company Formed.

The Wisconsin Retail Hardware Mutual Insurance Company were formed during this session, and members were invited to subscribe for insurance to be taken up when their present insurance expires. \$171,000 had been secured by the secretary by correspondence and \$179,000 were subscribed during the convention, making \$350,000 worth of insurance with which the company will launch their craft. The officers of the new company, as noted in our last issue, are as follows: President, O. P. Schlafer, Appleton; secretary, C. A. Peck, Berlin; treasurer, H. L. McNamara, Janesville.

## Question Box Continued.

The following questions came up before the meeting during the last session:

QUESTION 6. What is the best method of arriving at costs of an article made in a Tin shop?

Several answers were made to this question, but C. A. Dewey of Kenosha reported that he was receiving excerient results from the form which is reproduced herewith, which was compiled for him by Baker-Vawter Company of Chicago.

QUESTION 13. What is your experience with trading stamps?

ANSWER, BY THE SECRETARY: I have always consid-

	Jan, 20-04 For Milo Smith- on Jurnace Pipes.				
0	Date Jan Tinner Flogusen Blannes	2021		TOTAL MOURS	
4 [4	40 lbs Gal In	on 300			
	1 dg Bolts	10			
	Cement	25			
	2 sheets tin	50	, , ,		
	Tinners Time				
)	/	\$9.20			

Tin Shop Card.

Each of the above cards is numbered, and the number of the card is posted in the ledger in connection with the account ,and the cards are filed away so that at a moment's notice the card can be recovered and all the data are at hand.

QUESTION 7. What shall a dealer do to recover damages for goods injured in transit?

ANSWER. Make a just and reasonable claim to the railroad company, giving the cost of the article or the cost of repairing it. The trouble with most merchants is that they look upon the railroad company as common prey and endeavor to recover more than their just due.

QUESTION 8. What proportion of Nails, Sash Weights and Fence can a Hardwareman carry, in proportion to his other stocks, without failing?

ANSWER. A Hardwareman could not live and sell all his merchandise at the extremely narrow margin of profit that is left him on these lines, and the less he carries of them the better.

QUESTION 9. Why should jobbers' or manufacturers' agents go to shops or to foremen and sell Tools that should be bought from the local retailer!

Answer 1. Few reputable jobbers' or manufacturers' agents do this, but there are a few peddlers who masquerade as such who go into the shops and sell inferior Tools at high prices, never covering the same ground twice.

ANSWER 2. BY C. A. PECK: If a jobber did this in my town I would have a heart to heart talk with him unless the factory was a larger buyer of Tools than I was, and my experience is that jobbers and manufacturers are reasonable men and will not willingly jeopardize the business of their legitimate customers.

QUESTION 10. Why should a firm be patronized who sell at both wholesale and retail?

ANSWER. That is for every dealer to answer for himself.

QUESTION 11. The cold air circulation of my show window makes the floor above almost impossible to heat. What is the remedy?

ANSWER. In all likelihood you have more air draft than is necessary in your show window.

QUESTION 12. I have two rooms to heat with a Radiator where hot air cannot be used. What kind of coil should be used?

ANSWER. I use Smith's coil and find it excellent, but presume ordinary steam pipe might do.

ered the Hardware trade legitimate enough to make all such features unnecessary, and I tell these fellows that when I cannot sell enough Hardware to make a living then I will go into the stamp business.

#### Election of Officers.

The following officers were elected for the ensuing year:

PRESIDENT, H. L. McNamara, Janesville.

VICE-PRESIDENT, Ralph M. Burtis, Oshkosh.

SECRETABY-TREASURER, C. A. Peck, Berlin. EXECUTIVE COMMITTEE: A. H. Busse, Milwaukee, 1906; E. H. Ramm, New London, 1906, who will serve in connection with R. C. Murdock, Beloit, 1905; H. C. Scoffeld, Sturgeon Bay, 1905, elected last year.

## Convention Officials.

The active work of the convention was carried on by the following committees:

RECEPTION COMMITTEE: Simon Fink, Milwaukee; F. C. Burr, Milwaukee; J. W. Wilkie, Fond du Lac; Arthur Heins, Tigerton; Wm. Noll, Marshfield.

TRANSPORTATION COMMITTEE: E. H. Ramm, New Lon-

SERGEANT-AT-ARMS, A. Shopinsky, Milwaukee. COMMITTEE ON RESOLUTIONS: A. H. Sheldon, chairman, Janesville; R. C. Murdock, Beloit; H. C. Schoffeld. Sturgeon Bay.

QUESTION Box: C. E. Dewey, Kenosha; J. B. Pierce, Monticello; Ed. Watson, Beloit; Wm. Krueger, Neenah.

Press Committee: R. C. Murdock, Beloit; John Hessel, Antigo.

## Next Meeting.

In conformity with the custom of the association the next meeting will be held in Milwaukee the first Wednesday and Thursday of February, 1905. Many exhibitors have already reserved showrooms at the Republican Hotel for next year's session.

## Executive Committee Meeting.

After the close of the afternoon session on Thursday the Executive Committee met and fixed the salary of the secretary the same as last year and arranged to transfer a part of the surplus of the association to the insurance company, if necessary. The committee fixed on Green Bay as the next meeting place of the Executive Commit-The insurance directors authorized C. A. Peck. secretary of both the insurance company and the association to complete the organization. Insurance to the amount of \$350,000 was reported applied for already.

#### Members Present.

As there was no official roll call and no membership register, it was extremely difficult to compile a list of members present. The list which follows of houses represented is therefore incomplete:

Bragg, S. G., Gratiot.
Braatz, Robt. A., Wausau.
Brums, Geo. H., Lake Mills.
Burr & Sons, F. C., Milwaukee.
Bartlesen, H. B., Milwaukee. Bartiesen, H. B., Milwankee.
Burtis & Co., Oshkosh.
Bullwinkle, C. E., Jefferson.
Burkett, S. R., Phœnix.
Centralia Hardware Company
(L. M. Nash), Grand Rapids.
Charles, H. R., Whitewater.

Clancy, Lawrence, East Troy. Cole, W. A., Packwaukee. Dana, Geo. P., Fond du Lac. Dana, J., Fond du Lac. Deniger, J. W., Randolph. Dahl & Burr, Milwaukee. Daniels, E. H., & Co., Milwau-

Dieck, John, Suring. Dunn & Wood Hardware Com-pany, Rhinelander. Dewey, C. A., Kenosha. Droegkamp, John, Hardware

Droegkamp, John, Hardwa Company, Milwaukee. Esser & Schmidt, Hartford. Evans, R. J., Markesan. Evenson Bros., Tomahawk. Fink, S., Milwaukee. Foss-Armstrong Har Company, Ellsworth. Hardware

Company, Ellsworth.
Findeisen Bros., Green Bay.
Fuge, A. C., West Bend.
Field & Walcott, Sharon.
Gill, John, & Son, New Lisbon.
Grosjean, Wm. J., Milwaukee.
Greve Bros., Kiel.
Gaffron & Seifer, Plymouth.
Hilger. A.. Thiensville. Hilger, A., Thiensville.
Heinck & Benning, Milwaukee.
Hendrickson, H. J., Argyle.
Hayden, W. W., Sun Prairie.
Hill Bros., Wayside. Hughes, John, Fond du Lac. Hessel, John, Antigo. Heyer, H. J., Darien.

Haas & Hohmann, Kaukauna. Jacobs, A. A. Delayan. James, D. G., & Sons, Richland Center. John, Math., Milwaukee. Krueger, Wm., Neenah. Kleberg, A. H., Nekoosa

Kisselhoost, Chas., Manitowoc. Kahn, Andrew, Jr., Sauk City. Keisten, H. A., Racine. Krogmann, H. M., Milwaukee. Kraus & Grau, Port Washing-

ton. Kroncke, Alfred G., Madison. Labudde, O. A., Elkhart Lake. Lang, C. L., Fond du Lac. Lehemen, C. W., & Bro., Cedar-

burg.

McNamara, H. L., Janesville.

McDowell, S. E., Pewaukee.

Moore, Robt., Reeseville.

Murphy & Kerston, Racine. Moore, Robt., Reeseville.

Murphy & Kerston, Racine.

Matthaeus, F. W., New Holstein. Zweck, John V., Beaver Dam.

Alsmeyer, E. C., Cottage Grove.
Anderson & Fritz, Racine.
Arndt, John, Elkhart Lake.
Benlow, Geo. W., Waupun.
Bennborn-Nauert Hardware
Company, Boscobel.
Blanchard Bros., Blanchardville.
Meyer, Fred. W., Manitowoc.
Marschalck & Weiss, Milwaukee.
Meyer, Fred. W., Manitowoc.
Meyer, Fred. W., Manitowoc.
Miller Hardware Company, Alma

Miller Hardware Company, Alma Center Murdock-Dunwiddle

Beloit. Noll & Co., Chilton. Noll, Wm., Hardware Company, Marshfield.

Neubauer, A. A., Fremont. Olsen, M. H., Woodford. Peck, C. A., Hardware Company,

Berlin. Pittsville Pittsville. Prenzlow, H. F., Johnson Creek. Pflugradt Bros., Milwaukee. Pflugradt Bros., Milwaukee. Puchner, Rudolf, Wittenberg. Puchner, A. W., Edgar. Rinehold, R., Milwaukee.

Rathsack, Wm., & Sons, Manito-

woc. Raddatz, G. & Co., Milwaukee. Rassmum, F. R., Beaver Dam. Rusch & Hirth, Fond du Lac. Schofield, H. C., Sturgeon Bay. Schmidt, Chas., Milwauke Staadt, E. W., Milwaukee. Schroeder, Mr., Glidden. Milwaukee. Steensland, Arthur, Blanchard-

Suettinger R. H., Two Rivers. Spencer, F. M., Dartford. Stollenwerk Bros., Milwaukee. Schupinsky, Aug., Milwaukee. Speigieberg. Geo., Brownsville. Schlafer Hardware Company,

Appleton.
Sengbusch, F. J., Burlington.
Sheerin, C. S., Marshfield.
Schmidt, J. M., & Co., New Gla-

Smith & Meadows, Oconomowoc. Sheldon, A. H., Janesville. Stroebel & Baumgarten, Neenah.

Tank, F. G., Oshkosh. Teitgen, Emil, Manitowoc. Volckmann, H., Kingston. Dunn & Wood Hardware Company, Rhinelander. Wagner, J. F., Fond du Lac. Wooster & Jones, Wautoma. Wieland, Shepherd & Wieland,

Bayfield. Weinsick, J. W., Plymouth. Wernicke, Henry W., & Schmitt, Manitowoc.

Worrell & Zeman, Manitowoc. Wallschlaeger, J., Sons, Manito-

Hardware Company, Wilkie Fond du Lac. Winter, H. W., & Son, Clinton-

ville. Wegner, J. F., & Co., Fond du

Lac. Ziemann, J. O., Fall Creel

In addition to the following list of exhibitors, there were many manufacturers represented at the convention who made no set exhibits and had no reception rooms:

ALLITH MEG. COMPANY, Chicago, F. E. Sladden, W. D. Store Ladders, Fire Door and Barn Door lameson. Hangers.

AMERICAN SCREW COMPANY, Chicago, W. C. Nelson. AMERICAN STOVE COMPANY, George M. Clark & Co. livision, Chicago, L. D. Bond, E. B. Martin. Samples of Oil and Coal Stoves and souvenir metal Egg Dipper.

BAXTER STOVE COMPANY, Mansfield, Ohio, M. F. Stellwagen, Minneapolis representative for Michigan and Wisconsin. Full line of Stoves and Ranges.

PHILO D. BECKWITH ESTATE, Downgiac, Mich., H. L. Mosher, G. T. Adams. Samples Round Oak Stoves, Ranges, &c. Souvenirs, handsome beer stein and miniature silver Round Oak Stove watch charm.

E. Bement's Sons, Lansing, Mich., A. O. Bement, president; W. K. Bush, manager; Lee A. Smith, H. G. Heidt. Palace Stoves and Ranges.

BERGER MFG. Co., Canton, Ohio, Walter Voigt, Chicago, Western representative. Roofing, Siding, Ceiling and

Metal Work. Souvenir, Button Clip.
COLE MFG. COMPANY, Chicago, F. E. Bush, C. A. Wooley, Cole's Hot Blast Stoves and Ranges.

COLUMBIA MFG. COMPANY, Antigo, Wis., C. T. Mortenson. Screen Doors and Extension Screens.

ABRAM COX STOVE COMPANY, Chicago, C. L. Burch, Wisconsin and Michigan representative; H. W. Rusco, assistant manager. Novelty Stoves and Ranges.

ELLIOTT MFG. COMPANY, Warren, Ill., J. J. Walton, Western manager. Rust Proof Tinware.

EXCELSION STEEL FURNACE COMPANY, Chicago, A. W. Glessner, president; J. E. Flint, Wisconsin representative. Pipe and Elbows.

GERMAN STOVE COMPANY, Erie, Pa., H. Meinshausen, Chicago branch. Radiant Home Stove.

HIBBARD, SPENCER, BARTLETT & Co., Chicago, F. W. Lynn in charge, assisted by George E. Porter and C. A. Gustafson from Chicago office, and G. P. Plischke, A. E. Winter and A. B. Blanxious, road salesmen. Stoves, Sewing Machines, Pitkin's Paints and Sundries, Bicycles, Harness, &c.

HUNT, HELM, FERRIS & Co., Harvard, Ill., Frank G. Hood, assistant manager of sales; H. A. Shelden, Wisconsin salesman. Haying Tools, Barn Door Hangers, Tank Heaters and Children's Sleds.

HOME PRIDE RANGE COMPANY, Marion, Ind., C. W. Halderman, president; O. E. Halderman, vice-president and treasurer; O. C. Harrison, Wisconsin representative. Stoves and Ranges. Souvenir, Nickel Plated Cover Lifter.

JOLIET STOVE WORKS, Joliet, Ill., H. W. Smith. Moore's Stoves and Ranges, including New Cellar Dump Device, Detachable Boltless Elbow, Key Plate Chain Lift Attachment. &c.

JOHN KONTNY, Chicago, Sunshine and St. Clair Stoves and Ranges, Triumph Furnace and Boiler.

LANDERS, FRARY & CLARK, New Britain, Conn., E. L. Bigelow. Universal Bread Maker.

LAWBENCE Bros., Sterling, Ill., Edwin Lawrence, B. F. Isbell. Hangers, Strap Hinges, Butts, Ball Bearing Chimney Top Ventilator.

LOUDEN MACHINERY COMPANY, Fairfield, Iowa. Haying Tools and Barn Door Hangers.

MALLEABLE IRON RANGE COMPANY, Beaver Dam, Wis., Silas McClure, secretary. Monarch Stoves and Ranges. Souvenir, leather bill purse.

MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis., Louis Kuehn, president; L. N. Larson, G. Aussen, E. R. Probert. Art Steel Ceilings and Walls; Roofing, Siding, Eaves Troughs, &c.

L. J. MUELLER FURNACE COMPANY, Milwaukee, G. C. Mueller, vice-president; E. F. Schlecht, N. B. Garnsey. Furnace, Automatic Draft Regulator, Side Wall Register, &c.

M & D RANGE COMPANY, Chicago, J. H. Farquharson. Sample Ranges. Souvenir, dice box.

NOBVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., F. C. Brewer, W. H. Sudduth. Sporting Goods of all kinds.

JAMES E. PATTON COMPANY, and PATTON PAINT COM-PANY, Milwaukee, Sam Schwartz, F. W. Kenoke, H. F. Colopis, H. L. Brown. Paints. Souvenir, sunflower boutonnière.

C. A. PECK HARDWARE COMPANY, Berlin, Wis., C. A. Peck, L. C. Peck, "Uncle Sam's" Gem and Diamond Rural Mail Boxes, Barrel Truck.

PITTSBURGH STEEL COMPANY, E. C. Burdick, Janesville, Wis. Souvenirs, small samples Electrically Welded Wire Fence.

JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee. Souvenir, celluloid memorandum book.

RICHARDS MFG. COMPANY, Aurora, Ill., H. O. Spencer, treasurer; C. W. Schuchardt. Door Hangers, Fire Door Fixtures, Store Ladders. Souvenir, leather match case.

RHINELANDER MFG. COMPANY, Rhinelander, Wis., G. E. Wing, superintendent. Refrigerators.

ROBINSON FURNACE COMPANY, Chicago. Furnaces.

SCHILL Bros. Company, Crestline, Ohio, J. W. Roraback, H. L. Hoffman. Steel Ranges, Schill Oaks, New Idea Furnace. Souvenir, leather stamp case.

SIMONDS Mfg. Co., Chicago, J. Van Dyke, Jr., W. J. Feddery. Saws. Souvenir, Russia leather court plaster book.

CHARLES SMITH COMPANY, Chicago, L. H. Brewer. Furnaces and Hot Water Heaters.

STAVER CARRIAGE COMPANY, Chicago, H. C. Staver, president; J. J. Baker, C. W. Crumb.

STEBLING WHEELBARROW COMPANY, Milwaukee, Wis., C. A. Baker, president; A. G. Deller, secretary and treasurer. Forward Dumping Steel and Wood Wheelbarrows.

STOWELL MFG. & FOUNDRY COMPANY, South Milwaukee, Wis., J. M. Boyd, M. J. Evans. Hay Carriers, Barn Door Hangers, Side Wall Registers.

Solberg-Weber Company, Janesville, Wis., George L. Solberg. Landing-Ronning Labor Saving Bookkeeping System.

TUTTLE & BAILEY MFG. COMPANY, New York. Represented by Charles H. Lee of Lee-English Hardware Company, Baraboo, Wis. T. & B. special Side Wall Register.

JACOB J. VOLLRATH MFG. COMPANY, Sheboygan, Wis., Charles F. Riehl. Enameled Iron Ware.

Velle Carriage Company, Moline, Ill., C. E. Bowers. Voss Bros. Mfg. Company, Davenport, Iowa; H. C. White, general sales agent; Charles Mearns, sales manager. Ocean Wave and New High Speed Eagle Washing Machines.

WATERTOWN THERMOMETER COMPANY, Watertown, N. Y., D. L. Myers. Thermometers, Barometers, Hydrometers, Compasses and Scientific Instruments. Souvenir, button hole spiral thermometer.

WHEELING CORRUGATING COMPANY, Wheeling, W. Va., W. J. Norris, Wisconsin sales agent; exhibited photographs of Metal Ceilings, &c. Souvenirs, rulers and paper weights.

WHITE LILY WASHER COMPANY, Davenport, Iowa, Samuel T. White, general manager; Theo. Rosche, Wisconsin sales agent. White Lily Washers. Paper lily bouttonnière souvenirs.

WISCONSIN FOUNDRY & STEEL WORKS, Cedar Grove, Wis., John Jungers, president and general manager; J. Antoine. Birds King Steel Range.

James C. Woodley & Co., Chicago, J. C. Woodley. Red Rozin Sized Sheathing.

## ENTERPRISE PAINT MFG. COMPANY'S NEW BUILDING.

THE new factory and office building of the Enterprise Paint Mfg. Company, at the corner of Peoria and Van Buren streets, Chicago, is extremely attractive in appearance, its design having had a just appreciation of the beauty of simplicity and purity of line. building is well located, fronting on two streets and two alleys, giving unobstructed light on all sides and providing ample approach to the building for shipping and delivery purposes. The shipping floor opens onto a private shipping alley 20 feet wide at the rear. The building is four stories and basement high. The top floor is taken up with the stock of empty cans and containers of various kinds for the many products of the Enterprise Company, and in one room is carried the surplus stock of labels, &c. On the next floor below the process of grinding White Lead and Prepared Paint is begun, and a portion of the surplus stock of raw and manufactured stock is kept. On the third floor the grinding processes are continued and the stock of colors in oil stored. On this floor also is the Brush department, where a complete stock is carried. The superintendent's private office is on the second floor, and from here the manufacturing departments are managed. The second floor is used also for filling, sealing, packing and labeling. One-half of the first floor is taken up by well equipped offices, the other half by the shipping department. The basement contains the engine room and storage tanks.

The building is equipped with the sprinkler system, connected with a tank on the roof of 22,000 gallons capacity, has inclosed fire proof stairways, telephone equipment, lavatories, &c., on each floor, and, in general, all the equipment which goes to make up the modern factory building. One of the first floor features is the head-quarters of the advertising department, where the extensive publicity campaigns for Noxall Fast Color Paint and other products are carried on. Among other things the company publishes a sprightly magazine called "Paint Enterprise."

## THE YALE & TOWNE MFG. COMPANY'S PRICE BOOK.

THE YALE & TOWNE MFG. COMPANY, 9-13 Murray street, New York, have just issued Price Book in effect January 1, of revised list prices, applicable to illustrated general catalogue No. 17 and additions, aggregating about 1000 pages. The list prices thus given are based on the prices determined by the principal manufacturers of Builders' Hardware under the new and enlarged classification, which has recently been put into effect. The enormous and ever multiplying details of Builders' Hardware have compelled catalogue makers to create time saving methods for instantly finding what is sought without confusion by figures not pertinent. Like an encyclopædia or directory, it is not enough to know it is there; how to locate it immediately is indispensable. This book bound in stiff covers, contains 311 pages, each 12 x 9% inches, arranged in 11 subdivisions, named on the back of title-page, with corresponding cut marginal indexes for quick reference. Following page 2 relating to charges for irregular and special goods are three pages of Ornamental Hardware, arranged alphabetically by designs, of which there are 295, from "Abbotsford" to "Yorktown," with parallel vertical columns giving both price book and general catalogue pages. Pages 6 to 18 contain a numerical index of Locks, Latches, Piain Hardware and Plain Lock Sets, showing every list number with key letter in rotation from 0 to 84.054 V. with brief descriptive matter and pages in both the price book and general catalogue, so that if the individual knows name of design or number of any article he can find it instantly. Pages 21 and 22 describe the numerous perplexing metals and finishes catalogued. The next four pages describe more particularly the standard finishes. Then follow in regular order condensed matter with accompanying marginal miniature illustrations of designs, which are also consecutively numbered, thus making it practicable for the initiated to work rapidly, much of the time without consulting the general catalogue at all. The first division includes Night Latches and Dead Locks; second, Locks and Latches; third, Plain Hardware; fourth, Plain Lock Sets and Lock Trim; Knobs, Escut-Lever Handles; fifth, Ornamental Hardware, Hinge Straps, &c.; sixth, Cabinet Hardware; seventh, Keys and Blanks; eighth, Padlocks; ninth, Blount Checks; tenth, Cabinet Locks; eleventh, Trunk Locks. There is also an accompanying four-page schedule of changes and additions to Price Book B itself, bringing it right up to date. This volume is a very convenient and helpful one for the trade, facilitating as it does the purchase and sale of the necessarily complicated line of Builders' Hardware.

Hall-Robertson Hardware Company, Fargo, N. D., have recently taken possession of their new quarters, corner Eighth street, S. & N. P. avenue. The building consists of five floors, 50 x 140 feet, with 50 feet of side track and loading platform, and their capacity, the company state, is now three times as large as it was one year ago, so that they are in excellent position to take care of their growing trade.

## BRITISH LETTER.

Offices of The Iron Age, Hastings House, Norfolk St., London, W. C., January 30, 1904.

The Week's Hardware Trade.

NOTICED an amusing phrase in a financial column the other day which struck my fancy. The scribe remarked, "The market is still stagnating downward." This is expressive in its way, and with a slight alteration exactly describes the Hardware market. I would put it, "The Hardware market is still stagnating upward." Undoubtedly, taking the trade as a whole, things are better than a week ago, but no one will pretend that trade is good. Beginning for once with the distributor, it is abundantly evident that the average householder is feeling the strain of a trade depression, which is either present or incipient. He is, therefore, buying as sparsely as possible, with the result that the Hardware retail trade feel it. For example, orders are very few for fancy goods, such as jewelry, silver, electro plate and all that wild variety of modern bric-à-brac which the average man always wants to smash, but which the average woman erects almost into the dignity of Lares and Penates! These are precisely the goods that are not bought when financial stringency is threatened. Inasmuch, however, as they add very materially to the profits of the retailer, the effect throughout the trade is instantly felt. The stagnancy in the retail trade also extends to a number of utilitarian products, such as Nails, Screws, Hinges and Tools, though curiously enough tool setters are busy. Edge Tool manufacturers find business quiet, but they say this is more owing to the absence of foreign orders than anything else. The demand for Forks and Shovels is well maintained, both on home and export account. Probably, however, the brass foundry industries are feeling the improvement more than any other section, the demand running largely upon Hinges, Portière and Picture Rods and Hearth Furniture. Fancy brass work is only in limited request, but orders for Flower Vases and Pot Covers are above the average. During the week we have had mild, open weather, and this would seem to have had some slight reaction in favor of Garden Tools, Garden Rollers and Lawn Mowers, being, if not in actual request, at least the subject of inquiry. Plumbers' goods, such as Brass Cocks, Taps and Unions, are selling well, but stocks in these lines are still exceptionally heavy. For the rest, the factory activity in the Hardware trade is kept up more on long contracts than on present orders. As these long contracts mean cut prices, it follows that even if there is some stimulation in trade activity remunerative prices are still hard to get.

On overseas account trade with New Zealand continues satisfactory, showing, indeed, a tendency to expand, and better orders during the week have come from South Africa. Orders have reached Wolverhampton this week from India, China and other Eastern markets to some considerable value. It is thought that as quotations are now easier, a larger foreign business will be induced.

## Another American Invasion.

A story is going the rounds which illustrates the general British conception of the American invasion. An enterprising American came over to England and decided to open a Hardware store in Birmingham. He obtained premises next door to a man who also kept a store of the same description, but was not very pushing in his business methods. The methods of the Yankee, however, caused the older trader to wake up, and, with the spirit of originality strong upon him, be affixed a notice over his store, with the words: "Established a notice over his store, with a notice over his store to this effect: "Established Yesterday; No Old Stock." There may be a moral to this story, but I forbear to press it.

## The Sheffield Chamber of Commerce Report.

There are generally some interesting items in the annual report of the Sheffield Chamber of Commerce. The forty-seventh has just been issued. It is a very lengthy document, but one or two extracts from it may be useful to American readers:

Shipping Freights to South Africa.-The Council have more than once had this matter brought before them during the year, and they have done what they could to assist those who were opposing the operations of the shipping ring. That the attitude taken by the shipping ring must of necessity be prejudicial to the trade of the country goes without saying. Unfortunately, the only ray of hope of a better state of affairs has now been extinguished by the absorption of the Houston line by the ring, so that now the whole of the trade between this country and the cape is at the mercy of those carrying the goods by sea. The Council believe that in the immediate future it will be found that British traders are paying higher rates than their competitors abroad to one of their own colonies, and that their access to an important market will be seriously prejudiced by the action of their own countrymen commanding the oversea traffic.

Railway Carriage.—Considerable discussion has taken place on the question of the difficulties experienced by traders with the railway companies, and especially with regard to the owners' risk clauses, which have been construed by the railway companies in such a manner as to prevent the recovery of damage, even where it is obvious this must have been caused by gross carelessness on the part of the railway companies concerned. The contention of the railway companies extends to the position of refusing, where goods are sent at owners' risk, to pay for the total loss of the goods sent. Another difficulty has arisen in consequence of a forced construction which has been placed by the railway companies upon that portion of the Carriers' act which relates to the consignment of valuable goods. In both these cases it is felt that the action of the railway companies is inimical to trade, and, therefore, in the long run, against their own interest. The Council have appointed a committee to deal with these matters: but they feel that it is almost impossible for an isolated chamber to make headway against the strong combination of the railway companies. In the long run, if the present regulations of the railways are maintained, railway companies can only be met by instituting an association to act on behalf of the traders of the country generally, as in this way alone can be secured that community of action which is absolutely necessary if the companies are to be dealt with on even terms.

Trade-Marks in India.—The Council with the Cutlers' Company have made representations to the Secretary of State for India in favor of securing a system of registration of trade-marks in India. That so important a market should be without a system of registration, and thus make it easy for foreigners to infringe well-known trade-marks in that country, seemed to be an intolerable position, especially as there was evidence before them of serious infringements of trade-marks of traders within this district. The matter was brought before the Council of the Associated Chambers of Commerce, who took the opinion of the whole of the constituent chambers upon the matter

Trade-Marks in Portugal.—During the year a case was brought before the notice of the chamber in which a Sheffield firm had registered their trade-mark in Portugal, and yet, notwithstanding the registration, the authorities in that country had registered an identical mark for identical goods in favor of a Portuguese who, moreover, was the discharged agent of the English house. On inquiry it appeared that this was by no means unusual, for three or four cases came under notice, and there are

others in other parts of the country.

Hall-Marking of Foreign Plate.—The council supported by every means in their power the efforts of the Master Silversmiths' Association of Sheffield to secure, with the co-operation of the similar associations in London and Birmingham, legislation to prevent British Hallmarks being placed upon foreign silver sent here to be Hall-marked, with the deliberate intention of thereby conferring upon the goods an indication of British origin. The Members of Parliament of the city and district have assisted in the matter, but the principal burden has been borne by Samuel Roberts, the member for the Ecclesail division. Owing to the reluctance of the Government to take up the bill as a measure of their own, Samuel Roberts did not succeed in placing the bill he had introduced

upon the statute book. But some progress has been made. The Board of Trade and those promoting the measure have agreed upon the form of a bill, which has been settled by the Government draftsman, and it is hoped that in the ensuing session either a favorable place will be secured for the measure at the private members' ballot, or that the Government will take it up.

#### Americans Preferred.

The following account of the methods of British and American shippers to British Guiana, if it corresponds with the actual practice, would go far to explain the growth of American trade with the colony. According to the Demerara Daily Chronicle, colonial importers "have found that it is more satisfactory to do business with American firms, because they are able to ascertain prices f.o.b. at New York, whereas in England there are packing and railway charges to be reckoned with, which amount often to 21/2 per cent. on the value of the articles. Taking dry goods as an illustration, the freight and packing charges from Great Britain average about 10 or 11 per cent. on the original value of the goods, while from New York, with no packing charges to be considered, and with lower rates of freight to be paid, the first cost is added to by only 4 or 5 per cent. These are material differences in favor of the United States, and until the conditions of competition can be made more equal it is impossible to expect that the manufacturers and exporters of Great Britain can hold their own with American firms. A retaliatory tariff will not help matters. Even if goods from the States were penalized and preference accorded to British manufacturers, there would, we think, be very little change in the present tendency of trade. Prices would be substantially increased in the colony, to the injury of the consumer, but without affording any permanent advantage to British commercial interests." ica, it is argued, is the most natural market for the West Indian colonies, and she is learning to furnish their inhabitants with what they need in exchange at cheap

### Duty Free in Peru.

It is worth noting that on April 8 next the following articles will be admitted duty free into Peru—viz.: Uuthreaded Iron Boiler Tubes, Copper and Brass Steam Gauges, Copper and Brass Tubes, pieces of Steel of different forms, Round Axles of Hammered Steel, Injectors and Ejectors, Threaded Brass Oil Cups for engines, and Iron or Steel Plates, from ½ to ½ inch thick.

## Australian Demand for Binder Twine.

When the Australian tariff was being framed a duty of £5 per ton was imposed on Binder Twine, it being asserted that Victoria could supply the total quantity required by the Commonwealth. Now the unprecedented demand occasioned by the anticipated heavy harvest has proved too much for the Victorian manufacturers, and a big shortage is reported. Fairly large quantities are being obtained from New Zealand, but insufficient to meet even the most pressing requirements. The quantity required is estimated at 2700 tons.

## AMERICAN RETAIL ESTABLISHMENTS IN GERMANY.

NITED STATES CONSUL GUENTHER, at Frankfort, Germany, refers to the reports published in the German press as to the progress made by American manufacturers in their attempt to gain a firm and lasting footing in the larger cities of Germany by the establishment of retail stores. Heretofore it has been competition in branches specifically American. More recently, however, they say Americans have become competitors in the most varied branches of German home industries, some of which, as in Typewriters, Sewing Machines and Cash Registers, have almost paralyzed their own manu-Photographers' articles and musical instruments have become important, and now the experiment is being made with American shoes. The tendency of the American establishment is to avoid the middlemen as much as possible and deal directly with the purchasing public. They also try to simplify the business by dealing in but one article, which has been specially prepared for the German market. Emphasis is laid on the striking manner in which the attention of the public is obtained in contrast with German methods.

## PRICE-LISTS, CIRCULARS, &c.

Manufacturers issuing new catalogues or price-lists are requested to send to The Ibon Age two copies—one for the Caialogue Department in the New York Office, and one for the Iron Age Library of Trade Literature in London.

I. S. Spencer's Sons, Guilford, Conn.: Illustrated catalogue of Scales. These are shown in Tea, Counter, Even Balance and Beam Scales. They are prepared to make patented articles in the line of castings and machine work.

THE WM. SCHOLLHORN COMPANY, New Haven, Conn.: Catalogue and price-list, 1904, relating to Flat and Round Nose, Cutting, Chain, Gas, Electrician, Vise and Drill Rod Pliers; Cutting Nippers, Belt Punches, Staple Pullers, End Cutting Bolt Clippers, Spring Dividers, Pencil Holders, &c.

The Cronk & Carrier Mfg. Company, Elmira, N. Y.: Illustrated catalogue, 1904, devoted to Hardware Specialties. In addition to the company's former product, which is familiar to the trade, the following new articles are shown in the catalogue: Anticlog Rakes, Brown & Sharpe Pattern Pliers, Cronk's Adjustable Alligator Wrench, Lineman's Pliers, with insulated handles, Swedish Pattern Box Joint Diagonal Pliers, Lineman's Climbers, High Grade Screw Drivers, California and Oregon Hand Pruning Shears, San José Long Handle Pruning Shear, and about 25 new patterns of Pocket Knives. An improvement has also been made in the company's Staple Puller Plier. The company are sales agents for the new pattern Nall Puller of the Cedar Rapids Mfg. Company.

DAVIS ACETYLENE COMPANY, Elkhart, Ind.: Catalogue devoted to the Davis Carbide Feed Acetylene Generators and Gas Plants. These are made in sizes adapted to residences, factories, hotels, schools, large buildings and towns.

Maine Mfg. Company, Nashua, N. H.: Illustrated catalogues devoted to the various styles of the White Mountain Refrigerators and Ice Chests. The three great leaders for 1904 are referred to as opal glass lined, stone lined and white enameled. In addition, pine Refrigerators and Ice Chests, finished in imitation of flaked golden oak, are shown. Many illustrations are in colors, and colored illustrated circulars accompany the catalogues.

THE PHELPS & BIGELOW WIND MILL COMPANY, Kalamazoo, Mich.: Illustrated circulars of Steel Wind Mills and the Samson Tank Heater. The company also manufacture Steel Towers, Tanks and Cookers, Wood Wheel Wind Mills, Towers and Tanks.

NOBTH BROS. MFG. COMPANY, Philadelphia, Pa.: Ice Cream Freezers. An illustrated catalogue shows Lightning, Gem, Blizzard and Crown Freezers, Ice Breakers, Packing Tubs, Packing Cans, Ice Clippers and Ice Shavers. Freezers are made in hand and machine sizes.

J. Stevens Arms & Tool Company, Chicopee Falls, Mass.: Stevens-Duryea Gasoline Automobile is illustrated and described in a circular.

THE DBUMMOND MFG. COMPANY, Louisville, Ky.: Illustrated price-list of Solid Collar Concord Express Steel Axles, standard Double Collar Half Patent Steel Axles, Double Collar Half Patent Steel Axles with Collinge collar and felt pad, and Loose Collar Steel Axles.

THE WIRE GOODS COMPANY, Worcester, Mass.: Folder illustrating Bathroom Fixtures, made from plain Brass Wire, dipped and lacquered; also nickel plated and buffed. These include Soap and Sponge Baskets, Stand and Adjustable Hanging Baskets for tubs.

AMERICAN SCREW COMPANY, Providence, R. I.: Pricelist of Rivets, revised January 8, 1904.

THE MILTON MFG. COMPANY, Milton, Pa.: Bar Iron list, this being the national classification adopted March 16, 1899.

CONSOLIDATED RUBBER COMPANY, Trenton, N. J.: Illustrated price-list relating to Bicycle Tires, Rubber Belting, Hose of various kinds, Steam Packing, Rubber Tubing, Rubber Matting and Mats, Rubber Carriage Drills and Duck, &c.

CHARLES CLEAR, 1019 South Broadway, St. Louis, Mo.: Circular illustrating the Giant Clinker Tongs for removing clinkers from any kind of furnaces.

MONARCH ACETYLENE GAS COMPANY, Omaha, Neb.: Catalogue relating to Monarch Carbide Feed Acetylene Generators. These are illustrated and described.

THE JOHNSON HARVESTER COMPANY, Batavia, N. Y.: allustrated catalogue devoted to Mowers, Rakes, Corn Binders, Headers, Reapers, Binders, Harrows, Cultivators, &c.

MOUNT CARMEL BOLT COMPANY, Mount Carmel, Conn.: Price-list of Rivets, revised January 8, 1904.

BATEMAN MFG. COMPANY, Grenloch, N. J.: Catalogue illustrating and describing Iron Age Farm and Garden Implements, including Seeders, Hoes, Fertilizer Distributors, Drills, Cultivators, Harrows, Row Markers, Potato Planters, Barrel Trucks, Hand Carts, Garden Plows, &c. The company have a skilled corps of workmen designing new tools and making improvements on the old, and this year's catalogue is eight pages larger than the previous edition. The catalogue will be sent free upon application to the company.

NATIONAL METAL EDGE BOX COMPANY, 619-623 Cherry street, Philadelphia, Pa.: Metal Edge Paper Boxes. The company furnish the Boxes complete, or the Boxes cut, scored and cornered ready to set up. The latter are shipped and stored in the flat, and are made up by the purchaser as necessity requires.

Belding-Hall Mfg. Company, Belding, Mich.: Catalogues relating to each of the following lines of Refrigerators, the New Perfection, the National and the Edson. Each line is shown in variety of styles and sizes, the National having removable ice chamber and drip pan, while the Edson is porcelain and opalite glass lined. The New Perfection is zinc lined.

THE NATIONAL BED COMPANY, Moundsville, W. Va.: Catalogue devoted to a large line of Brass Trimmings and other Bed Supplies. It is probable that the company's line will later be enlarged so as to include Lamps, Burners, &c.

STUDEBAKER BROS. MFG. COMPANY, South Bend, Ind.: Catalogue No. 222, comprising the company's Farm Wagon, Business Wagon, Carriage and Passenger catalogues under the same covers. The pages devoted to the different classes of vehicles are tabbed, making quick reference possible.

## MISCELLANEOUS NOTES.

## Puritan Specialty Company.

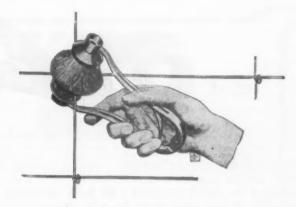
The Puritan Specialty Company are occupying their new factory at Stamford, Conn., in the building formerly occupied by the Blickensderfer Mfg. Company and the Eagle Bicycle Company, at 11 to 13 Garden street, the building being owned by Max J. Fuchs, president and treasurer of the company. The business was started in Boston by Arthur M. Flinn, who is the manager of the business and vice-president and secretary of the corpora-The manufacture high grade house furnishing goods, such as bathroom fixtures and other nickel plated goods, and small steel hardware; and are also importers of German and Austrian enameled and aluminum cooking utensils. The Marvel can opener, a new thing in its line, will shortly be put on the market, and several other small patented articles. Mr. Flinn has been engaged in the manufacture of metal goods for 20 years. Mr. Fuchs is a prominent Stamford man. The third director is Judge William Schildknecht.

## Calipers and Dividers.

The Athol Machine Company of Athol, Mass., are manufacturing a new line of standard calipers and dividers, in sizes from 2½ to 8 inches.

## Standard Wire Fence Painter.

Pittsburgh Woven Wire Fence Company, Pittsburgh, Pa., are offering the bristle brushes for painting wire fencing shown herewith. They have a malleable iron frame, fitted with a high grade steel spring 6 inches long, there being an opening between extreme limits of 5% inches and between brushes of 1 inch. The brushes are held in position by a set screw. At the forward end of each arm is a socket to hold the brushes, the socket



Standard Wire Fence Painter.

being extended into a cup to catch any drippings of paint should too much be taken. Paint is poured into the cup in the top of the arm and works down through the brushes, any surplus being caught in the brush cups and may be returned to the can. As the paint gravitates to the bottom brush, the user can readily equalize the distribution by reversing the device, using the bottom one on top. The manufacturers state that with this brush it is easy to paint 70 to 80 rods of fence a day, and do a good job, without spilling paint. The brushes are referred to as also being suitable for painting light structural work, and can be made for painting heavy structural material.

## Jelly, Fruit and Vegetable Strainers.

The accompanying cuts represent strainers offered by C. A. Roseland & Co., Rockford, Ill. The jelly strainer, Fig. 1, is alluded to as being made of good stock, neatly



Fig. 1 .- Queen Jelly Strainer.

finished, having a tinned wire cloth bottom securely put in by special machinery. The fruit and vegetable strainer, Fig. 2, is 5% inches in diameter and 3% inches deep. It is provided with a 6-inch wire looped tin handle,



Fig. 2.—Rew Fruit and Vegetable Strainer.

and a hook on the opposite side for hanging over a jar or other receptacle. The strainer has a concave bottom of fine mesh tinned wire cloth, which increases the straining surface as well as the depth.

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## The Hawkeye Wrench.

In the accompanying cut is shown a combination nut wrench, pipe wrench and thread cutter. It is pointed out that it will do all that any other wrench will do, and, in addition, will cut the threads on three different sizes of bolts. The wrench is made of drop forged 40-point carbon steel and scientifically hardened, thus giving the jaws great strength. All the binders and mowers manufac-

vantages of the Giant tongs in drawing unburned ends of wood to the front of the furnace so that they can be consumed.

## Studebaker Ideal Cast Skeins and Boxes.

The Studebaker Brothers Mfg. Company, South Bend, Ind., have recently put on the market a cast skein for farm wagons. The skein differs from the ordinary con-



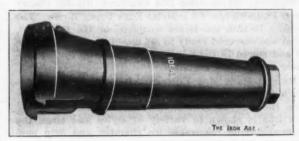
The Hawkeye Wrench.

tured by the International Harvester Company, it is remarked, are put together with three sizes of bolts, and the dies on the wrench will recut these three particular sizes. The manufacturers make the point that a large proportion of farm machinery has steel frames, and that threads on bolts becoming battered by being driven through the frames may be restored by the use of the dies, and the jaws may be used for tightening the nuts. The wrench is alluded to as successfully removing Neverslip and Rowe square shouldered calks.

## Giant Clinker Tongs.

Charles Clear, 1019 South Broadway, St. Louis, Mo., is offering the clinker tongs shown herewith. The tongs are so constructed that clinkers can be readily removed from any kind of a furnace. After the clinker has been raised to the top of the fire by the poker, the tongs are

struction, in that it has a deeper nut on end of spindle than usual and a larger flange. It is also claimed for it that it will take in a greater quantity of the axle wood than the old form, and that both in the mixture of metal

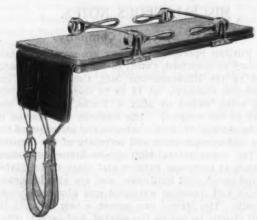


Studebaker Ideal Cast Skeins and Boxes.

employed and in the proportions of its design it overcomes weak points usually found in wagon skeins.

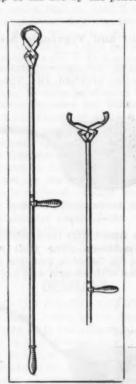
## The Perfect Pants Presser

The Perfect Pants Presser Company, 654 Rookery, Chicago, are introducing the Perfect pants presser, here shown, which is manufactured by the Stephens & Wescott Company, The Rookery, Chicago. In operation the upper board is removed, the pressing cloths on upper and lower boards moistened with sponge or cloth, when



Perfect Pants Presser.

the trousers can be laid on the lower board, care being taken to have the trousers legs smooth, with outer seams parallel. The top board is then replaced and the four eccentric levers pushed down, as shown. The garment should be left until thoroughly pressed, and then hung up to dry before wearing. If the trousers are very baggy, it is well to moisten the knees as well as the cloths to get the best results.



Giant Clinker Tongs.

inserted and will grip the clinker, no matter how large or small it may be, which can be removed without danger of burning the user. The tongs are strongly made, are of simple construction, with nothing to get out of repair, and measure 64 inches in length. The maker points out that those using wood furnaces will appreciate the ad-